SHEET 1

CONFIDENTIAL DESIGNATION   1

1   UNITED STATES INTERNATIONAL TRADE COMMISSION
2   WASHINGTON, D.C.
3   ------------------------------X
4   In the Matter of   :
5   :
6   CERTAIN VIDEO GRAPHICS DISPLAY: Investigation
7   CONTROLLERS AND PRODUCTS   :   No. 337-TA-412
8   CONTAINING SAME   :
9   :
10 ------------------------------X
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13   CONFIDENTIAL DESIGNATION
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16   Deposition of VLAD BRIL
17   (Taken by ATI Technologies)
18   Palo Alto, California
19   December 11, 1998
20
21
22
23
24
25 Reported by: Lynn C. Potter, CSR No. 10614

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1   APPEARANCES:
2   For ATI Technologies:
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14 Witness Address:
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16   2590 N. First Street, #101
17   San Jose, California 95131
18   (408) 570-0660, ext. 109
19
20   Deposition of VLAD BRIL taken by ATI
21 Technologies at 2200 Sand Hill Road, Suite 100,
22 Menlo Park, California, on the 11th of December,
23 1998 at 9:00 a.m., before Lynn C. Potter, CSR No.
24 10614.
25

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1   Whereupon, VLAD BRIL, having been duly sworn, was
2   examined and testified as follows:
3   EXAMINATION BY COUNSEL FOR ATI TECHNOLOGIES
4   BY MS. KORDZIEL:
5   Q.   My name is Linda Kordziel and I'm with
6   Fish & Richardson, and we represent ATI
7   Technologies in the investigation of the
8   International Trade Commission.
9   Could you please state your name for the
10 record, please.
11   A.   Vlad Bril. V-L-A-D, B-R-I-L.
12   Q.   And is counsel for Cirrus representing
13 you today?
14   A.   No.
15   MS. KORDZIEL: Do you want to state your
16 name for the record?
17   MR. KIM: Yes. Grant Kim appearing for
18 Cirrus Logic from Morrison & Foerster.
19   BY MS. KORDZIEL:
20   Q.   Thank you for coming today, Mr. Bril.
21 We'll be asking you a few questions about your work
22 experience while at Cirrus Logic.
23   At any time if you need to take a break
24 to get some water or something, please let me know
25 and we'll stop; however, during the breaks, please

1 refrain from talking to anybody regarding your
2 testimony either prior or subsequent.
3   MS. KORDZIEL: I'd like to have this
4 marked as Exhibit Number 1.
5   (Exhibit No. 1 was marked for
6   identification.)
7   BY MS. KORDZIEL:
8   Q. This is a subpoena ad testificandum.
9 Have you seen this document before?
10   A. Yes.
11   Q. And today we'll be talking about the
12 development and marketing of certain Cirrus
13 products.
14   First, I'd like to go through some of
15 your background. If you can tell me where you went
16 to -- some background about your education. Can
17 you tell me where you went to college?
18   A. In Bucharest in Romania.
19   Q. And what year did you graduate?
20   A. In '75.
21   Q. And what was your undergraduate degree
22 in?
23   A. I have a masters degree.
24   Q. So you have a masters degree?
25   A. Yes.

1   Q. What area of technology?
2   A. In control engineering.
3   Q. After you graduated, where did you go?
4   A. I worked in Romania.
5   Q. I'm sorry?
6   A. I worked in Romania.
7   Q. I see.
8   Q. When did you come to the United States?
9   A. In 1984.
10   Q. And what did you do in the United States
11 in 1984?
12   A. I worked for Intel.
13   Q. And what was your position at Intel?
14   A. I was the Intel-Israel coordinator.
15   Q. What were some of your responsibilities?
16   A. Actually, I was sent by Intel-Israel to
17 work in the U.S. in 1984.
18   Q. And what were some of your
19 responsibilities at Intel in the U.S.?
20   A. I was helping Intel-Israel design center
21 in Haifa with their work in the U.S. in Intel.
22   Q. How long were you at Intel?
23   A. For five years.
24   Q. Where did you go after Intel?
25   A. To Cirrus.

1   Q. Do you remember what year that was?
2   A. In '86.
3   Q. Oh, I thought you said that you were at
4 Intel for five years.
5   A. Correct.
6   Q. So that included the Intel work that you
7 did in Israel and the Intel work that you did in
8 the United States?
9   A. Right.
10   Q. What was your first position at Cirrus?
11   A. I was a senior design engineer.
12   Q. What group were you in at Cirrus?
13   A. The graphics group.
14   Q. Were you located in the Fremont,
15 California facility?
16   A. No.
17   Q. Where were you located?
18   A. In Milpitas.
19   Q. At this time, were you in a particular
20 part of the graphics group, for example, portable
21 graphics versus desktop graphics?
22   A. No.
23   Q. What products did you work on at this
24 time in 1986?
25   A. On VGA products.

1   Q. Do you remember the name of that
2 product?
3   A. The name? We were calling it Eagle.
4   Q. Did the Eagle product have any video
5 functionality or capabilities?
6   A. Not what I mean by video. I don't know
7 what you mean by video, but what I mean by video,
8 they didn't.
9   Q. What do you mean by video?
10   A. Video is motion video like TV or MPEG or
11 stuff like that.
12   Q. What was the next product that you worked
13 on at Cirrus?
14   A. It's confusing because VGA means video,
15 so it's very confusing. What I call it, it's
16 graphics.
17   Q. I see. So Eagle was a graphics
18 controller; is that correct?
19   A. It was a VGA controller.
20   Q. What was the next product you worked on
21 while at Cirrus after Eagle?
22   A. I worked on a product called Stingray.
23   Q. And what was the Stingray product?
24   A. This was a portable graphics controller.
25   Q. What were some of the features of the

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1   Stingray product?
2   A.   It was driving LCD panels.
3   Q.   What was your next product while at
4   Cirrus?
5   A.   It was called Condor.
6   Q.   And what was this time frame of the
7   Condor project?
8   A.   I don't know.
9   Q.   And what was the Condor product?
10   A.   It was an S-stop controller.
11   Q.   After the Condor product, what was your
12   next product?
13   A.   It was called Raven. Actually, Condor
14   transformed into Raven, which was a portable
15   graphics controller.
16   Q.   And what were some of the --
17   MR. KIM: What type of controller?
18   THE WITNESS: Portable graphics.
19   THE REPORTER: Could you speak up a just
20   a little bit, please, because I need to write down
21   what you're saying and I can't hear you that well.
22   THE WITNESS: Okay.
23   BY MS. KORDZIEL:
24   Q.   What were some of the features of the
25   Raven product?

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1   portable graphics.
2   Q.   And what was the next product that you
3   worked on?
4   A.   There was a product called Stealth.
5   Q.   And what were some of the features of the
6   Stealth product?
7   A.   It was actually based on this 3.3 Word
8   Raven; I don't know what it did.
9   Q.   Was it also a graphics controller?
10   A.   It was a portable graphics controller. I
11   don't know about it.
12   Q.   What was the next product you worked on
13   after the Stealth product?
14   A.   After this was a product called Mustang.
15   Q.   Mustang?
16   A.   Mustang, which was also portable graphics
17   controller that had only one memory.
18   Q.   What do you mean by "had only one
19   memory"?
20   A.   Before, all the controllers had separate
21   memory to support the STN panels, and this one had
22   one. Didn't need this separate memory.
23   Q.   Do you remember whether or not it was a
24   DRAM or a VRAM memory?
25   A.   It was DRAM. We never used VRAM memory.

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1   A.   What is scalable memory using -- I don't
2   remember -- using page mode DRAMS.
3   Q.   What was the next product after the Raven
4   product that you worked on?
5   A.   Then I worked for a while on an XGA
6   product called Shasta.
7   Q.   And that's XGA?
8   A.   (Indicating in the affirmative.)
9   Q.   And do you remember the time frame of
10   this product?
11   A.   After Raven. I don't remember when.
12   Q.   Would this be early 1990s or late 1980s?
13   A.   I don't know.
14   Q.   And what were some of the features of the
15   Shasta product?
16   A.   Shasta was intended to be a XGA graphics
17   controller for desktop.
18   Q.   And what was the next product after the
19   Shasta product?
20   A.   After this was a -- I don't remember the
21   name. It was a product that was kind of a 3.3 Word
22   Raven based but I don't remember the name.
23   Q.   So it was based on the functionality of
24   the earlier Raven product?
25   A.   Right. It was also portable, for

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1   Q.   Could the memory of the Mustang hold
2   video and graphics data?
3   A.   No.
4   Q.   Was there any advantage in using one
5   memory for the STN panels?
6   A.   Yeah, it was cheaper.
7   Q.   And what are STN panels?
8   A.   They are the super twist nematic,
9   N-E-M-A-T-I-C.
10   Q.   After the Mustang portable graphics
11   controller, what was the next product you worked
12   on?
13   A.   I worked on a product called Terminator.
14   Q.   And what were some of the features of the
15   Terminator product?
16   A.   The main thing was it was based on the
17   Acoumos desktop controller, so this was after the
18   acquisition of Acoumos by Cirrus and this was
19   basically taking the Acoumos based desktop
20   controller and making it for a notebook for
21   portable graphics.
22   Q.   What were some of the features of the
23   Acoumos' desktop controller?
24   A.   It was cheaper.
25   Q.   Did it have an integrated RAM deck?

1   A.   Yeah. Or the Mustang had that. I think
2 before we -- (inaudible) .
3   Q.   I'm sorry?
4   A.   Previous controllers had the integrated
5 RAM.
6   Q.   Okay. I see.
7   After the Terminator product, what was
8 the next product you worked on?
9   A.   It was something called -- it was some
10 modification of Terminator which was putting color
11 DSTN panels. This was actually the first
12 controller that supported colors DSTN panels. But
13 I don't remember the names.
14   Q.   Do you recall the time frame?
15   A.   (Indicating in the negative.)
16   Q.   And during throughout this time we've
17 talked about, were you still at the Milpitas
18 location?
19   A.   No, some time during this time Cirrus
20 moved to Fremont.
21   Q.   And you had mentioned earlier you were
22 senior design engineer in the graphics part of the
23 company. Did your position change with respect to
24 the time frames?
25   A.   Yeah, actually, when we started Condor, I

1 was actually the engineering manager of the team.
2 And basically when we went to XGA, to do XGA, I
3 moved in another group. And then when I came back,
4 I was again engineering manager of the team that
5 was doing this project.
6   Q.   This project meaning the Terminator?
7   A.   All these projects, yeah.
8   Q.   Who did you report to as engineering
9 manager?
10   A.   To Prakash Agrwall.
11   Q.   Can you spell his name, please?
12   A.   P-R-A-K-A-S-H, A-G-R-W-A-L-L.
13   Q.   And who worked in your group?
14   A.   Who worked in my group? When?
15   Q.   I guess during the Terminator project.
16   A.   Ravi Parameshwarayer.
17 P-A-R-A-M-E-S-H-W-A-R-A-Y-E-R.
18   Q.   So after the Terminator product, you
19 worked on another product that was the first one to
20 support color DSTN panels. What was the next
21 product after that product?
22   A.   Then we did the product called -- which
23 we were calling Nordic.
24   Q.   And do you remember the time frame of the
25 Nordic product?

1   A.   No. After this one. I don't know.
2   Q.   And what were some of the features on the
3 Nordic product?
4   A.   It was based on the different desktop
5 controller.
6   Q.   Do you remember what the desktop
7 controller was?
8   A.   It was -- I don't know exactly. It
9 was --
10   Q.   Was it the 5428?
11   A.   I don't know. It's either 26 or 28 but
12 I'm not sure.
13   Q.   And what were some of the other features
14 of the Nordic product?
15   A.   I think it could do some -- it had like a
16 video window, a hard drive video window.
17   Q.   So it had video functionality?
18   A.   It had some video functionality.
19   Q.   Was it a single integrated graphics and
20 video controller?
21   A.   You can call it this way but it was -- it
22 could play video by the CPU box.
23   MR. KIM: Excuse me? You said you could
24 play video by the --
25   THE WITNESS: Over the CPU box.

1   MR. KIM: Thanks.
2   BY MS. KORDZIEL:
3   Q.   Are you familiar with the term
4 multi-format frame buffer?
5   A.   Yes.
6   Q.   What does that term mean to you?
7   A.   What it means is you have different data
8 formats in the memory and you can display either
9 one or both together and you can overlay them.
10   Q.   So multi-format frame buffer could hold
11 YUV video data and RGB graphics data; is that
12 correct?
13   A.   Yes.
14   Q.   Did the Nordic product have back-end
15 processing, for example, back-end video
16 processing?
17   A.   Like scaling? Is that what it is?
18   Q.   That's correct, or color space
19 conversion.
20   A.   Yeah, it had color space conversion and
21 scaling.
22   Q.   What type of scaling? Do you remember
23 whether or not it was replicated or interpolated?
24   A.   The back-end scaling, the scaling done on
25 the display side, I think it was

rpolated.

Q. And do you remember whether or not this was horizontal or vertical interpolation?

A. It was both.

5   Q. We'll come back and discuss the Nordic
6 features in more detail, but I'd like to go ahead
7 and finish out the summary of the background.

8   After the Nordic product, what product
9 did you work on?

10 A. Something called Viking. Actually,
11 Nordic and Viking are more or less the same thing.

12 Q. Is the Viking product based on the Nordic
13 product?

14 A. Yeah.

15 Q. And what was the next product you worked
16 on?

17 A. It was Everest.

18 Q. And what was the Everest product?

19 A. It was also Viking and Huntsman. It was
20 maybe the first product to support video well
21 because it had the video port.

22 Q. So Everest could support live video?

23 A. Depends what you mean by live video. You
24 could have video fed on a separate board than the
25 CPU box; that's why the Nordic and Viking were able

---

1 as well as he had other functions, manufacturing
2 program for graphics.

3   Q. Do you remember who was in your group
4 while working on the Nordic product?

5   A. Who was?

6   Q. Yes.

7   A. Rakesh Migresh, Dwarka Batani, Danny
8 Sling, Saga Kinkaury, then Thomas Hund, H-U-N-D.
9 There were many people.

10 Q. Going back to the products, after the
11 Everest product, what product did you work on?

12 A. It was Matterhorn.

13 Q. And what was --

14 A. This was a 3-D product.

15 Q. Was Matterhorn based on the Nordic
16 product?

17 A. Initially. Until I left the company. It
18 was based on Everest.

19 Q. Did you work on another product after the
20 Matterhorn product?

21 A. No, I left the company.

22 Q. What year did you leave the company?

23 A. Excuse me?

24 Q. What year did you leave Cirrus?

25 A. In '96.

---

1 to play video which was fed over the CPU box
2 whereas Everest was able to play video fed over
3 video port.

4   Q. So like, for example, from a camera?

5   A. Yeah, camera, any source.

6   Q. A video camera?

7   A. Yeah.

8   Q. During the time when you were working on
9 the Nordic product, what was your position?

10 A. Actually, when you say camera, it is not
11 correct.

12 Q. Oh, okay. What would it be then?

13 A. It's something that would provide for the
14 2RUV, like an MPEG decoder.

15 Q. A what?

16 A. An MPEG decoder.

17 Q. So while you were working at Nordic, what
18 was your position?

19 A. I was in charge of the group, of the
20 engineering group for portable graphics.

21 Q. You were in charge of the portable
22 graphics group at this time?

23 A. Yeah, I was reporting to Del Mank.

24 Q. And what was Del Mank's position?

25 A. He was in charge of the portable graphics

---

1   Q. I'd like to go back and talk some more in
2 detail about the Nordic product.

3   Do you remember when you first started
4 working on the Nordic product?

5   A. No.

6   Q. This was marked as Exhibit Number 3 in
7 the Dickinson deposition, and it's a document
8 bearing Bates numbers 110877 through 110855. Have
9 you seen this document before?

10 MR. KIM: Excuse me; are you going to
11 mark this as an exhibit?

12 MS. KORDZIEL: Since we marked it in the
13 Dickinson deposition, we're not going to go ahead
14 and re-mark it.

15 MR. KIM: Okay. Have you been doing that
16 at other depositions?

17 MS. KORDZIEL: Right.

18 MR. KIM: Okay.

19 BY MS. KORDZIEL:

20 Q. Does this refresh your recollection
21 regarding when you started on the Nordic product?

22 MR. KIM: I'm sorry; did you ask whether
23 he recognized Dickinson Exhibit 3?

24 MS. KORDZIEL: I did.

25 MR. KIM: And the answer was?

1   THE WITNESS: I don't know. I'm looking
2 at it.
3   MR. KIM: I just don't see Mr. Bril's
4 name on this.
5   THE WITNESS: I don't remember this.
6   BY MS. KORDZIEL:
7   Q.   Do you recall any trips taken in the
8 summer of 1993 regarding the Nordic product?
9   A.   No.
10   Q.   Does this refresh your recollection
11 whether or not you started working on the Nordic
12 product in the summer of 1993?
13   MR. KIM: I'm sorry; I didn't hear
14 what --
15   THE WITNESS: I wouldn't say so. I don't
16 know. This doesn't -- I don't see anything here
17 which would tell me.
18   BY MS. KORDZIEL:
19   Q.   This was marked Exhibit Number 4 in the
20 Dickinson deposition, and it's a document bearing
21 Bates numbers 110917 through 110919.
22   MR. KIM: Is there a question pending?
23   MS. KORDZIEL: No, I was going to give
24 him a couple minutes to review to review it.
25   MR. KIM: Okay.

1   BY MS. KORDZIEL:
2   Q.   Do you recall a Nordic presentation tour
3 by Del Mank in August of 1993?
4   A.   I don't know. I can't place it in time.
5 I cannot place -- I don't know. They were doing
6 many trips and I wasn't, you know... (trailing off)
7   Q.   So you weren't --
8   A.   Not necessarily aware. But in any case,
9 even if I was, I wouldn't recall now.
10   Q.   And so you weren't involved in any of
11 these trips to customers regarding the Nordic
12 product?
13   A.   I was involved in one trip to TI.
14   Q.   Do you remember the time frame of that
15 trip?
16   A.   No, I don't.
17   Q.   Do you remember what was discussed with
18 TI?
19   A.   They wanted us to do something else and
20 we wanted to convince them to wait for some
21 product; I don't know, you know, Viking, Nordic,
22 something. I don't know which one.
23   Q.   Do you know what the result of that
24 meeting was?
25   A.   They waited. They didn't do something

1 else.
2   Q.   What do you mean "they waited"?
3   A.   You said they were a customer of ours.
4 So to expand their product line, they had a
5 specific requirement to enhance the product what
6 they were using, and they didn't plan to switch to
7 the new product, so we convinced them to basically
8 wait for the new product and switch to it when it's
9 available.
10   Q.   And what was the new product?
11   A.   Either Nordic or Viking.
12   Q.   Do you remember who went with you on this
13 trip to TI?
14   A.   Del Mank.
15   Q.   Did anybody else go?
16   A.   Probably. I don't remember.
17   Q.   Do you remember whether or not there were
18 any discussions regarding price?
19   A.   No. I don't know.
20   Q.   This is a document that was marked as
21 Exhibit 5 in the Dickinson deposition, and it's
22 bearing Bates numbers CL26389 through CL26507. Did
23 you participate in any operations reviews?
24   A.   Operations reviews? What do you mean by
25 that?

1   Q.   For example, a portable graphics review
2 of operations or anything.
3   A.   Whose meeting would this be?
4   Q.   The user interface company.
5   A.   Who would lead the group?
6   Q.   I don't know.
7   A.   Then I don't know what to answer.
8   Q.   Okay. If you turn to page 26448.
9   A.   26448?
10   Q.   Yes. Under the bullet point marking
11 "must dos," it refers to a marketing plan. Do you
12 know what a marketing plan is?
13   MR. KIM: Are you asking as used in this
14 document or just generally speaking?
15   MS. KORDZIEL: As used in this document.
16   MR. KIM: Objection. Lack of
17 foundation. I don't think there's been any
18 testimony that Mr. Bril authored this document or
19 that he's familiar with it, so I don't know what
20 basis there is for him to testify about this
21 document.
22   BY MS. KORDZIEL:
23   Q.   Are you familiar with this document,
24 Mr. Bril?
25   MR. KIM: Are you talking about this

MS. KORDZIEL: This page.

THE WITNESS: I don't remember. Probably but I don't know. Maybe I saw this before, but I
5 am not -- I cannot remember, you know, seeing this
6 particular page.
7   BY MS. KORDZIEL:
8   Q.   Do you remember a marketing plan for
9 Nordic?
10   A.   No. I don't quite understand what you
11 mean by a marketing plan. We used to have
12 something called like a marketing requirement
13 document.
14   Q.   And what is a marketing requirements
15 document?
16   A.   It is more like something to justify a
17 product, you want the market sizes and how you make
18 money with it.
19   Q.   Was there a marketing requirements
20 document for the Nordic product?
21   A.   Maybe. I don't know. I don't remember.
22   Q.   Do you know what a preliminary
23 specification is?
24   A.   A preliminary specification?
25   Q.   Uh-huh.

---

1 used this term.
2   Q.   Okay. Turning to the next page, 26449,
3 at the top of the page, the first bullet point
4 says, "Nordic development on track -- TO still okay
5 by 1/31/93."
6   A.   Uh-huh.
7   Q.   What is your understanding of that
8 statement?
9   MR. KIM: Objection. Lack of
10 foundation. Calls for speculation. You might ask
11 first if he recalls the document.
12   THE WITNESS: Should I answer or not?
13   MS. KORDZIEL: Oh, you can go ahead and
14 answer.
15   MR. KIM: Yeah, when I make objections,
16 it's from --
17   MS. KORDZIEL: It's preserving it for the
18 record.
19   MS. KORDZIEL: The testimony that you
20 give today may be used in a court at some point,
21 but today as you can see, there's no judge here.
22 So I need to make an objection, and then later if
23 we go to court, the judge can hear the objection.
24   THE WITNESS: Oh, okay.
25   MR. KIM: So you can go ahead and answer

---

1   MR. KIM: Are you asking as used in this
2 document or in general?
3   MS. KORDZIEL: In general with respect to
4 the Nordic product.
5   THE WITNESS: It could be many things,
6 and I usually get more involved with specifications
7 done by engineering so I don't know if what you
8 talk about if it's an engineering specification or
9 a marketing specification.
10   BY MS. KORDZIEL:
11   Q.   So the engineers would prepare their own
12 specification and marketing would prepare another
13 specification; is that correct?
14   A.   Yeah. If at all. If marketing was doing
15 something, they would normally prepare their own
16 specification.
17   Q.   Do you know what a data book is with
18 respect to the Nordic product?
19   A.   Data book?
20   Q.   Yes.
21   A.   I'm not familiar with this. What do you
22 mean by data book?
23   Q.   So data book wasn't something prepared by
24 engineering?
25   A.   I wouldn't call it data book. I never

---

1 if you --
2   THE WITNESS: I don't want to say
3 something --
4   MR. KIM: Well, there are a lot of
5 special rules for a deposition, but if I make a
6 objection, if you understand the question, you can
7 answer it. If you don't understand the question,
8 of course, you can ask for clarification.
9   I'll just mention also that if at any
10 point you need to take a break, just let us know.
11   MS. KORDZIEL: Right.
12   THE WITNESS: Okay.
13   BY MS. KORDZIEL:
14   Q.   Well, have you seen this document
15 before?
16   A.   I'm not sure. I don't recall.
17   So what's the question?
18   Q.   What is your understanding of that first
19 bullet point, "Nordic development on track -- TO
20 still okay by 1/31/93"?
21   A.   Well, normally --
22   MR. KIM: Excuse me. I do need to make
23 my objection. I don't want to interrupt you, but
24 just for record I need to, so if you could just
25 wait a second.

1   I'll just object. I repeat my
2   objection. Lack of foundation. Calls for
3   speculation.
4   You can answer if you can.   •
5   THE WITNESS: Okay. I would say, you
6   know -- I don't know who wrote this. And it's --
7   you know, I'm looking at this to figure out if it
8   was actually written by me. But if it was written
9   by me, then "TO" would mean tape out.
10   BY MS. KORDZIEL:
11   Q.   And what is tape out?
12   A.   When you ship something to fab or when
13 you start out thinking -- there are many meanings
14 depending on how you do your processing. Basically
15 you are kind of getting the database ready for some
16 stage or, you know, like you can either start
17 routing or you can ship to the wafer fab or you do
18 for sign off. It depends -- actually, normally
19 what you do is say tape out to the wafer fab or
20 tape out to the routing group or tape out to the AC
21 house or whatever.
22   Q.   What was your understanding of the next
23 statement, "PCI bus, panel logic and top level
24 design phase completed"?
25   MR. KIM: Objection. Lack of

1   foundation. Calls for speculation and the document
2   speaks for itself.
3   THE WITNESS: So you're asking me what
4   does this mean?
5   MS. KORDZIEL: That's correct.
6   BY MS. KORDZIEL:
7   Q.   What is your understanding?
8   MR. KIM: If you have an understanding,
9   you can answer, but if -- there's no obligation for
10 you to speculate if you don't know.
11   THE WITNESS: No, these are some blocks
12 basically so you completed something related to the
13 blocks.
14   BY MS. KORDZIEL:
15   Q.   Do you know what a top level design phase
16 would be?
17   MR. KIM: As used in this document?
18   MS. KORDZIEL: Yes.
19   MR. KIM: I repeat my objection. Lack of
20 foundation. There's no showing that Mr. Bril wrote
21 this document.
22   THE WITNESS: Yeah, it is possible that,
23 you know, the normal meaning of top level would be
24 the -- how do you say -- the pet logic and
25 connecting the first level of -- top level of the

1   blocks in hierarchy connecting them together. By
2   top level you actually mean the, you know, hooking
3   the blocks together into the top level, but this
4   is, you know, my own language, technical language
5   basically. That's what I would mean by top level.
6   BY MS. KORDZIEL:
7   Q.   Do you remember -- using your definition
8   of top level, do you remember when the top level
9   design for the Nordic product was completed?
10   A.   No.
11   Q.   The next bullet point, what is your
12 understanding of simulation in progress?
13   MR. KIM: Repeat my objection. Lack of
14 foundation. Calls for speculation. Document
15 speaks for itself.
16   THE WITNESS: It's fuzzy to say the
17 least. What simulation? It's not clear.
18   BY MS. KORDZIEL:
19   Q.   Would simulation be a computer
20 simulation?
21   A.   Of course it's computer simulation, but
22 there are many ways -- many types of computer
23 simulations.
24   Q.   What are some of the types of computer
25 simulation that was used in the Nordic product?

1   A.   Well, you know, you did logic simulations
2   for different blocks and you did logic simulation
3   for the chip and you did spice simulation for the
4   analog. So when you say simulation, you don't say
5   too much. It doesn't even say if it's analog or
6   digital.
7   Q.   Do you remember when the simulation for
8   the Nordic product took place?
9   MR. KIM: Objection. Vague and ambiguous
10 as to simulation. Which kind?
11   THE WITNESS: I don't. Actually, when
12 you asked this question, you know, basically you
13 cannot design without doing simulations. You can,
14 but it's not customary. So, you know, when you
15 design, you do simulation.
16   BY MS. KORDZIEL:
17   Q.   At the bottom of the document it states,
18 "portable products operations review -- August
19 1993." Does this refresh your recollection when
20 you started development work on the Nordic
21 product?
22   A.   I couldn't say when we started. And what
23 do you mean by start development? It's kind of --
24 you know -- how do you -- it's just like
25 architecture work or it's actual design?

ifying? What is it? That's a long process.
            BY MS. KORDZIEL:
       Q.   Defining the architecture for the Nordic
4 product?
5   A.   I don't know this.
6   Q.   Would that be -- do you know whether or
7 not that would have been before August 1993?
8   A.   It's possible. I don't know.
9   You know, if what was presented here is
10 correct, if what was said here is true, then, you
11 know -- and this is a speculation basically, but
12 normally the architecture would have been well in
13 progress or -- because the architecture is normally
14 done before the design or existing parallel with
15 some design.
16   Q.   Did you work on the architecture of the
17 Nordic product?
18   A.   Yes.
19   Q.   What does the architecture of a Nordic
20 product encompass? What features?
21   A.   It would help basically. The
22 architecture of one has to be edited to the desktop
23 core in terms of pictures, design blocks, registers
24 that kind of stuff, plus it would refer to pin out
25 and pin out configuration. So I don't think -- I'm

1 and RGB data; is that correct?
2   A.   Yeah.
3   Q.   Did it also include color space
4 conversion from YUV to RGB?
5   A.   Yes.
6   Q.   Did the motion video architecture include
7 scaling?
8   A.   Yes.
9   Q.   Who came up with the concept of the
10 motion video architecture?
11   A.   I did.
12   Q.   Do you recall when you came up with the
13 concept of the motion video architecture?
14   A.   No.
15   Q.   When was the term "motion video
16 architecture" first used?
17   A.   I don't know, but I created it.
18   Q.   Did you also create the term that was
19 used, "motion video architecture"?
20   A.   Yeah, as far as I know.
21   Q.   Did the Nordic product include the motion
22 video architecture?
23   A.   Maybe. I'm not sure, because I don't
24 know in what time frame this was created.
25   Q.   Did the Nordic product have the

not sure I you understood the question.
2   Q.   So let me just make sure I'm clear. The
3 architecture would include these features that you
4 just mentioned, design blocks, pin out
5 configurations --
6   A.   The architecture has to refer to all
7 this.
8   Q.   And do you remember the time frame of
9 defining the architecture for the Nordic product?
10   A.   No.
11   Q.   Are you familiar with the term "motion
12 video architecture"?
13   A.   Yes.
14   Q.   What does that term mean?
15   A.   What this means -- this refers to the
16 fact that you have a multi-format frame buffer and
17 you can define the hardware window in which you
18 store data that comes at video rate like anywhere
19 between 15 and 30 hertz per second, so 15 to 30
20 frames per second; and you can display it in what
21 they call a hardware window together with graphics
22 data which is normally held in memory in some RGB
23 format or palletized format.
24   Q.   So the motion video architecture
25 including multi-format frame buffer that held YUV

1 multi-format frame buffer?
2   A.   Yes.
3   Q.   And the Nordic product also had the color
4 space conversion capability?
5   A.   Yes.
6   Q.   And did the Nordic product have the
7 back-end video scaling?
8   MR. KIM: Objection. Vague.
9   THE WITNESS: I think so. I'm not sure
10 but I think so.
11   BY MS. KORDZIEL:
12   Q.   Did the Nordic product have color
13 keying?
14   MR. KIM: Objection. Vague and
15 ambiguous.
16   THE WITNESS: Color keying? I don't
17 know.
18   BY MS. KORDZIEL:
19   Q.   We've been going on for about an hour,
20 would you like to take a short five-minute break or
21 do you want to continue?
22   A.   We can take a break.
23   MS. KORDZIEL: Okay. We'll take a short
24 break and go off the record.
25   (Recess taken.)

1 MS. KORDZIEL: Let's go back on the
2 record.
3 BY MS. KORDZIEL:
4 Q. Earlier I believe you testified that you
5 came up with the concept of the motion video
6 architecture. Did anyone else work with you in
7 defining that concept?
8 A. I'm not sure.
9 Q. Did you come up with the concept of the
10 multi-format frame buffer?
11 A. Probably.
12 Q. I'm sorry?
13 A. Probably. I'm not sure.
14 Q. Do you know whose idea it was for a
15 multi-format frame buffer?
16 MR. KIM: Objection. Asked and
17 answered.
18 THE WITNESS: I don't know. It may have
19 been mine but I am not 100 percent sure. I don't
20 remember right now.
21 BY MS. KORDZIEL:
22 Q. This was marked as Exhibit 6 in the
23 Dickinson deposition. It's a document bearing
24 Bates number CL26759 through 26878. And if you can
25 turn to page 26825 in Exhibit Number 6.

1 A. Do I need this one?
2 Q. No.
3 A. What page?
4 Q. 26825.
5 A. Yes.
6 Q. Have you seen this page before?
7 A. I don't think so. I don't remember.
8 Q. What is your understanding of proof of
9 technology? In the very middle of the page it
10 states, "Proof of technology is needed before
11 multi-media video specifications can be closed."
12 MR. KIM: Objection. Lack of
13 foundation. Calls for speculation and the document
14 speaks for itself.
15 THE WITNESS: I'm not sure. These are
16 not my words.
17 BY MS. KORDZIEL:
18 Q. Do you know generally what proof of
19 technology refers to?
20 MR. KIM: I repeat my prior objection.
21 THE WITNESS: In general it means that
22 somehow you need to prove there is a viable
23 technology. And I don't know if I remember
24 correctly but there was a lot of push back --
25 political push back from different groups in Cirrus

1 at the time claiming that multi-media should not be
2 supported in graphics controllers including the
3 desktop group.
4 So I would speculate that given the
5 pressure from different other groups like pixel and
6 David King, who was the desktop architect, they
7 were trying to kind of make possible not to do
8 this. So, you know, whoever wrote this was
9 reflecting, I assume, some kind of technical doubt
10 that this can be done at all or it has to be proven
11 first somehow in the lab or something.
12 BY MS. KORDZIEL:
13 Q. What does it mean generally to close
14 features or close a specification?
15 MR. KIM: Are you referring to this
16 document now?
17 MS. KORDZIEL: Just generally.
18 MR. KIM: Objection. Vague and
19 ambiguous.
20 THE WITNESS: Maybe there is an agreement
21 between marketing and engineering what type of
22 features are on the product.
23 BY MS. KORDZIEL:
24 Q. Do you remember when the multi-media
25 features of the Nordic product was closed?

1 A. No.
2 MR. KIM: Objection.
3 THE WITNESS: But during the entire
4 design cycle, there was constant pressure coming
5 from other groups not to do this. So I don't think
6 this means too much in this respect.
7 BY MS. KORDZIEL:
8 Q. Why were other groups asking -- wanting
9 you not to do this?
10 MR. KIM: Objection. Calls for
11 speculation.
12 THE WITNESS: There was -- you know,
13 there was -- at least what it was told was by
14 different groups is that it cannot be done or it's
15 too expensive. I don't know.
16 BY MS. KORDZIEL:
17 Q. Do you know whether or not customers were
18 interested in these multi-media features?
19 A. Yeah, we had customers who were.
20 Q. Did you participate in any of these
21 customer meetings other than the TI one?
22 A. I cannot place this. At some point I
23 went to Japan and spent some time in Japan but I
24 don't know exactly for which product and in what
25 time frame.

SHEET 6

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1 Q. Do you remember how many trips you made
2 to Japan?
3 A. One.
4 Q. Did you work with people that were in the
5 marketing group at Cirrus regarding the Nordic
6 product?
7 A. To a certain extent.
8 Q. And what was the type of interaction that
9 you had with the marketing group?
10 A. We would work together to decide what
11 features to put in the product and what would be
12 the time frame of the execution.
13 Q. Who did you meet with in the marketing
14 group regarding the Nordic product?
15 A. I don't know exactly. There was some
16 kind of transition in the marketing at the time. I
17 don't know exactly what time frame but I think
18 initially the guy that worked on Nordic was Mark
19 Singer and there were people like Preta Raja and
20 Rafael Melbiaz.
21 So Mark was actually in charge of the
22 marketing group for portables, and then a little
23 bit later, Bokoner came and Mark moved to do other
24 things. So all this transition -- actually,
25 sometime during the Nordic execution where

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1 practically the entire marketing changed.
2 Q. Were you informed of marketing's
3 activities with respect to the Nordic product?
MR. KIM: Objection. Vague and
ambiguous.
THE WITNESS: I don't know.
BY MS. KORDZIEL:
Q. For example, did they inform you of
10 meetings or presentations they made with
10 customers?
11 A. In general, yes.
12 Q. Do you know whether or not marketing made
13 any trips to customers in the fall of 1993?
14 A. I don't know. I cannot place things in
15 time.
16 Q. If you'd turn to page bearing Bates
17 numbers 26828 in Exhibit Number 6.
18 A. Okay.
19 Q. Have you seen this page before?
20 A. Probably. This was probably written by
21 me.
22 Q. What does Nordic 1M refer to?
23 A. Nordic-1M? I don't know. I don't know
24 what 1M means. I don't remember.
25 Q. Could it mean one megabyte?

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1 A. No. I don't know why it's called 1M. I
2 really don't. I cannot remember right now. You
3 know, maybe if I -- I may think of it later but
4 right now I cannot off the top of my head know what
5 it is.
6 Q. What is your understanding of the first
7 bullet point, "Complete and freeze Nordic-1M
8 definition ASAP"?
9 A. That you need to stop adding features
10 basically.
11 Q. What does the definition usually
12 include?
13 MR. KIM: Are you talking about here or
14 generally?
15 MS. KORDZIEL: Here.
16 THE WITNESS: The definition of a product
17 usually included features.
18 BY MS. KORDZIEL:
19 Q. Does it include register specifications?
20 A. No.
21 Q. Does it include pin out specification
22 it's?
23 A. Usually not.
24 Q. What else does it include?
25 A. What does it not include?

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1 Q. No, does it include.
2 A. It's mostly the features as described in
3 one of two pages basically, like how much memory
4 you support, what speed you run, what kind of CPU
5 box you have; you know, that could mean big
6 things. You know, to support scaling, for instance
7 would be a good example where, you know, stuff
8 that --
9 Q. For example, the multi-format frame
10 buffer, would that be a feature?
11 A. I wouldn't say it would be mentioned as
12 such in the feature set. This is more an
13 architecture description, but it would be mentioned
14 more as, for instance, video support. You know,
15 you can have a video window. This would be a
16 feature. How exactly it's implemented, you know,
17 we can do video in many ways. You don't need to
18 necessarily do it with multi-format frame buffer.
19 You can do overlay. There are other ways to do
20 it.
21 Q. What does it mean by the bullet point,
22 "Complete live video bread-board by 10/30/93"?
23 MR. KIM: Objection. Lack of
24 foundation?
25 THE WITNESS: I cannot recall. I do not

1 remember bread-boarding, so I can't or don't
2 understand this page.
3   BY MS. KORDZIEL:
4   Q.   So you don't remember a video bread-board
5 from the Nordic product?
6   A.   No.
7   Q.   Do you know what the half-frame buffer
8 module design was with respect to the Nordic
9 product?
10   A.   This refers to this bullet?
11   Q.   Yes.
12   A.   The half-frame buffer, the module is
13 really related to LCD panels. That's how it would
14 be supported.
15   Q.   What about the last bullet point where it
16 says, "Continue to engage customers and get market
17 feedback." What is your understanding of that last
18 bullet?
19   MR. KIM: Objection. Lack of
20 foundation.
21   THE WITNESS: The assumption in this
22 phrase would be that, you know, exactly what it
23 says that some customer engagement was necessary
24 to make sure that we kind of fine tune the overall
25 system, especially software architecture of the

1 product.
2   BY MS. KORDZIEL:
3   Q.   I'm sorry; what was that? Software?
4   A.   The software architecture. There was
5 some technical issues at the time as to how you
6 would support this kind of hardware and software,
7 so we wanted to make sure that the overall system
8 understanding by the -- see, we had to get the buy
9 off by the customers on the overall hardware and
10 software architecture.
11   Q.   Who was working on the software
12 architecture for the Nordic product?
13   A.   That's a good question. I don't
14 remember. We had a drivers group and I was
15 interacting with them, but I wouldn't say that they
16 were doing the architecture. Probably the closest
17 would have been Marcia, Marcia Psutsia, who was
18 actually the manager of the software group or
19 something like that.
20   MR. KIM: How do you spell that?
21   THE WITNESS: Marcia, M-A-R-C-I-A,
22 P-S-U-T-S-I-A, something like this, or T-C-I-A.
23   BY MS. KORDZIEL:
24   Q.   This document was marked as Exhibit 9 in
25 the Dickinson deposition, and it's bearing Bates

1 numbers CL17825 through CL17836. Have you seen
2 this document before?
3   A.   Actually, we were also working with some
4 guys from Pixel on the software.
5   Q.   Do you remember who from Pixel you were
6 working with?
7   A.   I don't remember his name. Actually, I
8 tried several days ago to remember his name. I
9 don't know his name.
10   Q.   Could it have been Robert Nally?
11   A.   No. Robert Nally was involved but not --
12 he was not really -- he was kind of inter -- how to
13 say -- he was interfacing with a group in Pixel and
14 I don't remember the name. There was a relatively
15 junior software engineer that was very helpful but
16 I don't remember his name.
17   Q.   Was Robert Nally involved in defining the
18 motion video architecture?
19   MR. KIM: Objection. Vague and
20 ambiguous.
21   MS. KORDZIEL: I'm sorry; I didn't --
22   THE WITNESS: I don't think so.
23   MR. KIM: My objection is vague and
24 ambiguous as to time.
25   BY MS. KORDZIEL:

1   Q.   What was Mr. Nally's involvement with
2 respect to the Nordic product?
3   MR. KIM: Objection. Vague and
4 ambiguous.
5   THE WITNESS: I don't know. He was
6 supposed to help with the system definition and
7 system architecture but I didn't really find
8 this -- you know, I wouldn't say that he really
9 helped.
10   BY MS. KORDZIEL:
11   Q.   Why wouldn't you say he helped? What do
12 you mean by that statement?
13   A.   Oh, he was supposed to come up with ideas
14 and kind of get involved in things.
15   Q.   And did he come up with ideas?
16   MR. KIM: Objection. Vague and
17 ambiguous.
18   THE WITNESS: He would come up with some
19 ideas but not necessarily -- sometimes they were
20 not necessarily helpful.
21   BY MS. KORDZIEL:
22   Q.   Did Mr. Nally come up with the idea of
23 the multi-format frame buffer?
24   A.   I don't know.
25   Q.   Do you know who came up with the idea of

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1 the multi-format frame buffer?
2 .   A.   I'm not sure.
3   Q.   Did Mr. Nally contribute to the motion
4 video architecture definition?
5   MR. KIM: Objection. Vague and
6 ambiguous.
7   THE WITNESS: Not that I remember.
8   BY MS. KORDZIEL:
9   Q.   Do you know a person by the name of John
10 Schaeffer from Pixel?
11   A.   Yes.
12   Q.   Did you work with John Schaeffer?
13   A.   Depends what you mean by "worked."
14   Q.   With respect to the Nordic product.
15   A.   No.
16   Q.   Was he involved in the Nordic product?
17   A.   I don't think so.
18   Q.   Was Mr. Schaeffer involved in the motion
19 video architecture?
20   MR. KIM: Objection. Vague and
21 ambiguous.
22   THE WITNESS: I don't think so.
23   BY MS. KORDZIEL:
24   Q.   Who worked on the motion video
25 architecture definition?

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1   A.   I did.
2   Q.   Did anybody else?
3   A.   There was a guy Alex Eglit who was
4 working in my group and Rakesh Bindlish.
5   Q.   Anybody else?
6   A.   That's all I remember.
7   Q.   What was Mr. Eglit's position?
8   A.   He was a design engineer in portable
9 graphics.
10   Q.   And what was his contribution to the
11 motion video architecture?
12   A.   He worked on scaling and he actually
13 designed the video data box.
14   Q.   Anything else?
15   A.   Actually, I remember, he was supposed to
16 draw a bread-board but he never did it.
17   Q.   Other than the scaling and the data video
18 bus, what else did Mr. Eglit work on with respect
19 to the motion video architecture?
20   A.   What else?
21   Q.   (Indicating in the affirmative)
22   A.   He worked on the LCD shading, and with
23 respect to the video architecture, I think he did
24 the scaling also on the video port. But the video
25 port was not in Nordic, so if you're talking about

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1 Nordic, that's about it basically.
2   Q.   With respect to Nordic, what was
3 Mr. Bindlish's contribution to the motion video
4 architecture?
5   A.   He designed -- if I remember correctly, I
6 am not sure, but I think he designed the memory
7 part of the video data bus like fetching from
8 memory. He was actually doing the memory control,
9 but I am not sure. I may be mistaken.
10   Q.   What do you mean by video data bus?
11   A.   Path, P-A-T-H.
12   Q.   Oh, path?
13   A.   Right.
14   Q.   Oh, I'm sorry.
15   And then earlier when we were talking
16 with Mr. Eglit, you also were referring to video
17 data path; is that correct?
18   A.   Right.
19   Q.   I'm sorry; I must have misheard you.
20   And what was the video data path in the
21 Nordic product?
22   A.   It is, you know, basically the path that
23 allows you to take data from memory and store it in
24 a file and then process it, synchronize it with
25 graphics, put them together and then display. So

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1 the path from 542, the blender.
2   Q.   Would the blender be the output
3 selector?
4   A.   Yeah, the blender would be when you
5 put -- when you mix graphics and video together.
6   Q.   Like a multiplexor of some type?
7   A.   Depends how it's done.
8   Q.   When you mentioned that Mr. Bindlish
9 worked on the memory part, did he work on the frame
10 buffer?
11   A.   On the frame buffer?
12   Q.   For example, did he work on designing a
13 multi-format frame buffer?
14   A.   That's -- how do you say -- there is a
15 chip block that's called multi-format frame buffer,
16 so we cannot work on something like this.
17   Q.   And what do you mean by you cannot work
18 on something? What did you mean by that last
19 statement?
20   A.   To work on something, you have to --
21 there must be a block called -- like if you say I
22 worked on X, you know, this assumes X is a block.
23 Now, X -- now, there isn't a block called
24 multi-format frame buffer on the Nordic chip, so we
25 could not have worked on it.

1   Q.   He worked on the memory controller; is
2 that correct?
3   A.   Right.
4   Q.   Could the memory controller be used with
5 a multi-format frame buffer?
6   A.   Yeah, you need to design the memory
7 controller to be able to support the multi-format
8 frame buffer.
9   Q.   I see. So Mr. Bindlish designed the
10 memory controller and the design of the memory
11 controller would support a multi-format frame
12 buffer; is that correct?
13   A.   He might have. I'm not sure.
14   Q.   What other contribution did he have to
15 the motion video architecture?
16   A.   Who?
17   Q.   Mr. Bindlish.
18   A.   I don't know.
19   Q.   And what was your contribution to the
20 motion video architecture?
21   A.   I cannot -- I created the concept
22 basically. And I can -- yeah, basically that's
23 it.
24   Q.   Turning back to Exhibit Number 9 of the
25 Dickinson deposition, if you look on the page

1 bearing Bates number CL17829, up at the top in that
2 middle bullet point it states, "Motion video
3 architecture for playback."
4   A.   Uh-huh.
5   Q.   Is that the motion video architecture
6 that you worked on?
7   A.   Probably. I don't know. It says motion
8 video.
9   Q.   Do you remember the time frame of when
10 you came up with the concept of the motion video
11 architecture?
12   MR. KIM: Objection. Asked and
13 answered.
14   THE WITNESS: No, I don't.
15   BY MS. KORDZIEL:
16   Q.   If you turn to the next page CL17830, on
17 the bottom of the page it states, "Nordic MVA allow
18 a 24 bpp video playback window while running 4 or 8
19 bpp windows."
20   What is your understanding of that
21 statement?
22   MR. KIM: Objection. Lack of
23 foundation. I don't know if we've established that
24 Mr. Bril is familiar with this document.
25   THE WITNESS: Yeah, MVA was, you know,

1 shorthand for motion video architecture. And it
2 was saying that when you run like YUV you can
3 convert it to 24 bits per pixel, so it was saying
4 basically that you can play back MPEG or other
5 video standards while at the same time you are
6 doing graphics in 4 or 8 bits per pixel. So that's
7 what it says.
8   BY MS. KORDZIEL:
9   Q.   So was the Nordic product capable of
10 handling different color depths?
11   A.   Different color depths? It was able --
12 for graphics or video or for both?
13   Q.   For both.
14   A.   That's what this says.
15   Q.   Did the Nordic product have a compression
16 feature?
17   A.   Yes.
18   Q.   And so the frame buffer that was used
19 with the Nordic product could store compressed
20 video data; is that correct?
21   A.   Yes.
22   Q.   Could the frame buffer that was used with
23 the Nordic product store regular YUV video data,
24 not compressed video data?
25   A.   Yes.

1   Q.   If you look on page 17835, at the top of
2 the page there's a bullet point, "On course for end
3 of January/early February tape out."
4   Do you remember when the initial tape out
5 of the Nordic product occurred?
6   A.   Can you repeat? Where is it?
7   Q.   At the very top of the page, there's a
8 bullet point that states, "On course for end of
9 January/early February tape out." Does that
10 refresh your recollection of when the tape out of
11 the Nordic product occurred?
12   A.   No. Yeah, I don't know. I don't
13 remember the tape out.
14   Q.   This was marked as Exhibit 11 in the
15 Dickinson deposition. Have you seen this document
16 before?
17   A.   I don't remember. I kind of doubt but
18 maybe I did. It's not something I would remember.
19   Q.   If you turn to page 110788, up at the top
20 of the page under "milestones" it states, "Major
21 function specification closed," and gave a date of
22 October '93 and status of done.
23   Do you recall a major function
24 specification with respect to the Nordic product?
25   A.   I don't recall a specific document that

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1 would be called major function specifications.
2 Actually, I doubt something like this exists.
3   Q.   After that --
4   A.   So this is more like an action. I don't
5 think it refers to a document. It may be referring
6 to just an activity basically.
7   Q.   Do you know whether or not the major
8 function specification of the Nordic product was
9 closed in October of '93?
10   A.   I don't know.
11   Q.   The next --
12   A.   You actually notice that with some
13 presentation right before it was -- we were talking
14 much later that we wanted to close, so probably
15 this was, you know -- I don't know if it was done
16 or not done.
17   Q.   But under the right-hand column under
18 "status," at least for this document it says done;
19 is that correct?
20   MR. KIM: Are you asking him just to read
21 the document? I'll object to that that the
22 document speaks for itself.
23   THE WITNESS: Yeah.
24   BY MS. KORDZIEL:
25   Q.   Well, what is your understanding of the

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1 status?
2   A.   You cannot -- it is defective to have a
3 document that says done and you have another
4 document that requests things to be frozen. So I
5 don't know what the timing relationship is between
6 them but, you know, it just means if it's on paper,
7 it's not necessarily true.
8   Q.   Referring back to Exhibit Number 6.
9   MR. KIM: Dickinson Exhibit Number 6?
10   MS. KORDZIEL: That's right.
11   BY MS. KORDZIEL:
12   Q.   Page 26828 where it talks about the
13 freezing of the Nordic definition, that document
14 was dated in September of 1993; is that correct?
15   A.   Which one? This one?
16   Q.   The one we were talking about --
17   A.   Oh, yeah, you're right. This is
18 September 16th, yes.
19   Q.   So that was before --
20   A.   So, yeah, maybe it makes sense. I don't
21 know. It could have been. I wouldn't know
22 basically. It is not -- I cannot recall it when
23 exactly it was frozen.
24   Q.   Do you recall that initial data sheet for
25 beta sites with respect to the Nordic product?

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1   A.   Do I recall what? Do I recall that they
2 listed something like this?
3   Q.   That's right.
4   A.   It's possible that it exists. I don't
5 recall right now if there was something like this,
6 but it is conceivable.
7   Q.   Do you know what an initial data sheet
8 is?
9   A.   Initial data sheet? I believe it's
10 called preliminary. I don't know if it --
11   Q.   What is a preliminary data sheet?
12   A.   A preliminary data sheet is actually a
13 data sheet that is used until everybody's
14 comfortable to issue a data sheet on which is not
15 written "preliminary"; that is, even products that
16 are in production may have a preliminary data
17 sheet. So it's a very wide area from before -- you
18 know, from some point in time, even before you have
19 silicon until after you do characterization and
20 split logs and whatever -- whenever marketing
21 decides to take the word "preliminary."
22   Basically what preliminary means is that
23 the company cannot be accused of having a document
24 that doesn't conform to the silicon or to whatever
25 will be in silicon or whatever, so it's kind of an

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1 insurance work.
2   And there are actually many data sheets
3 that never took the preliminary off, word off them,
4 even if products were shipped in millions. It's
5 almost a legal word.
6   Q.   Do you remember when the time frame of
7 the preliminary data sheet for the Nordic product
8 occurred?
9   A.   I don't.
10   Q.   And what types of information is
11 contained in the preliminary data sheet with
12 respect to the Nordic product?
13   A.   Normally -- I don't know exactly what the
14 Nordic data sheet had but you would have like some
15 feature description like a summary that was in more
16 detail, and you have -- you may have maybe some
17 register summary, some pin out, some system,
18 diagrams and probably some AC/DC parameters.
19   Q.   Looking at the next item, "Presentation
20 of completed Nordic spec to beta sites," what is
21 your understanding of that item?
22   MR. KIM: Objection. Lack of
23 foundation. The document speaks for itself.
24 You're asking for his recollection or for his
25 guesses too as to what the document means looking

1 at it now?

2   MS. KORDZIEL: For his understanding.

3   MR. KIM: I guess I will also object as

4 calling for speculation.

5   THE WITNESS: I don't really know, yeah.

6 Completed Nordic spec. What do they mean by that?

7 Yeah, I don't know.

8   BY MS. KORDZIEL:

9   Q.   Do you recall when the Nordic spec was

10 completed?

11   A.   No.

12   Q.   Was it near the end of '93?

13   MR. KIM: Objection. Vague and

14 ambiguous. He's testified there's several meanings

15 of spec.

16   THE WITNESS: Yeah, I don't know.

17   BY MS. KORDZIEL:

18   Q.   If you turn to the 110790, do you know

19 what a product cost projection is?

20   A.   Yes.

21   Q.   What is it?

22   A.   It's how much you expect it to cost.

23   Q.   And how is that determined?

24   A.   It's determined based on the expected die

25 size and the expected wafer cost and packaging.

1   Q.   When during the development of a product

2 is a product cost projection made?

3   MR. KIM: Are you talking about this

4 product or any product?

5   MS. KORDZIEL: In general.

6   THE WITNESS: It can be done at any

7 time. Usually all this is kind of done almost the

8 whole time. You do it before you do anything, that

9 is, somebody will always ask you, okay, what do you

10 think the die size will be and how many pins you

11 have and then immediately blast some spreadsheet

12 calculations and see how much it would cost. And

13 you can do it -- you would be doing it in very

14 early stages. You would be doing it later. Your

15 accuracy improves, but at any point in time,

16 marketing needs to know something.

17   BY MS. KORDZIEL:

18   Q.   And why does marketing need to know?

19   A.   Oh, because they have to do like the

20 marketing -- how do you say -- they have to do this

21 marketing requirements document. Initially when

22 you start a project, you have to show how you make

23 a profit. And later they have to know what price

24 to put on the project and what prices to quote. So

25 this is essential. It's an essential part to make

1 sure that the product is viable basically.

2   Q.   So it helps marketing in determining what

3 prices to quote to customers then?

4   MR. KIM: Objection. Vague and

5 ambiguous. Only talks about one point in time.

6   THE WITNESS: It helps marketing to prove

7 that the product is to be done in the first place.

8 It helps marketing to decide if they want to make

9 the product. And it helps them to a certain

10 extent, not that much, but it helps to a certain

11 extent to set out the ASP of the product.

12   BY MS. KORDZIEL:

13   Q.   And what is the ASP?

14   A.   The average selling price.

15   Q.   Up at the top under the -- it says

16 "Product Nordic." Right underneath that it says,

17 Process, C6-3LM. Do you know what the C6-3LM

18 refers to?

19   A.   C6 means it's 4 to 6 micron technology

20 and it's three layers of metal, three layers of

21 metal.

22   Q.   Was there a specific process for the

23 Nordic product?

24   MR. KIM: Objection. Vague as to time.

25   THE WITNESS: You mean fab process?

1   MS. KORDZIEL: That's correct.

2   THE WITNESS: Yeah, there was a process.

3 I don't recall exactly but I think it was NTSMC but

4 in this point six microprocess. I think so.

5   BY MS. KORDZIEL:

6   Q.   When in the development --

7   A.   Actually, I'm not sure. Yeah, I don't

8 know. I'm confusing with different products.

9   Q.   When in the development of the Nordic

10 process is the -- oh, strike that.

11   When in the development of a Nordic

12 product is the process determined?

13   MR. KIM: Objection. Vague.

14   THE WITNESS: The fab process you mean?

15   MS. KORDZIEL: That's right.

16   THE WITNESS: Usually early in the

17 process because we have analog, and the analog set

18 weights have to be custom designed for the

19 process. Also Cirrus had -- was doing their own

20 libraries, set libraries, so you have to have a set

21 library for the process. So unless another product

22 used them, you had to make sure. So usually when

23 you design something, you are choosing the fab.

24   BY MS. KORDZIEL:

25   Q.   What happens if you make design changes?

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1 Do you have to change the fab process?

2   MR. KIM: Objection. Vague as to what

3 changes.

4   THE WITNESS: If you make design

5 changes? That's really a vague question.

6   BY MS. KORDZIEL:

7   Q. Well, for example, you explained that the

8 process is determined early in the development

9 stage. What happens later during the development

10 and you make changes to the design? Does the

11 process also have to be changed?

12   MR. KIM: Objection. Vague.

13   THE WITNESS: It depends if you achieve

14 your cost objectives, your margin objectives, your

15 speed objectives. You -- so there is not a black

16 or white answer to this question.

17   BY MS. KORDZIEL:

18   Q. Has the definition of a product already

19 been set before a process is selected?

20   MR. KIM: Objection. Vague.

21   THE WITNESS: Not necessarily. In

22 general, the architecture, the definition, all

23 these things are kind of living things and it is a

24 desire of the execution group to freeze the

25 definition like the macro definition, but you

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1 always have something creeping there, some customer

2 said something, so when -- you will never be able

3 to do a product unless you decide something and go

4 on. So it's not a straight line. It's a zigzag.

5   BY MS. KORDZIEL:

6   Q. This is a document -- if you can mark it

7 Exhibit Number 2.

8   (Exhibit No. 2 was marked for

9   identification.)

10   BY MS. KORDZIEL:

11   Q. Have you seen this document before,

12 Mr. Bril?

13   A. I don't remember. Maybe. I don't know.

14   Q. Do you know what a test scheme for a

15 Nordic tape out is?

16   MR. KIM: Objection. You're asking about

17 its use in this document?

18   MS. KORDZIEL: In general with respect to

19 the Nordic tape out.

20   THE WITNESS: A test?

21   BY MS. KORDZIEL:

22   Q. Was there a test scheme?

23   A. What do you mean by test scheme?

24   Q. Are you familiar with the term "test

25 scheme"?

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1   A. It doesn't sound -- doesn't like some

2 kind of usual -- it's not a usual term.

3   Q. Would it be like a final testing of the

4 final integration of the different modules?

5   A. I don't know. It sounds more like a joke

6 term, you know, like test scheme. You know, it's

7 probably some kind of replacement for a test plan.

8 It's not the usual term. It's more like, you know,

9 somebody who -- (trailing off)

10   Q. What is a test plan?

11   A. You know, a test plan would be something

12 where you say what people have to do and like how

13 people have to verify something before it goes out

14 or after it comes in.

15   Q. This document is dated January 27, 1994.

16 Does that refresh your recollection of when the

17 Nordic tape out occurred?

18   MR. KIM: You're asking whether Mr. Bril

19 recalls having seen this not whether the document

20 says what it says?

21   MS. KORDZIEL: Recalls when the Nordic

22 tape out occurred.

23   THE WITNESS: You know, I don't

24 actually. You know, you show me a document that

25 says, okay, tape out. I probably did, but I don't

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1 know -- I cannot place it in relation to something

2 I remember without saying okay, yeah.

3   BY MS. KORDZIEL:

4   Q. Do you recall verifying different

5 portions of the Nordic product in January of 1994?

6   A. I wouldn't say I do.

7   Q. Typically how early does a test plan

8 occur before the actual tape out?

9   MR. KIM: Objection. Vague.

10   THE WITNESS: It can take -- it depends

11 on the project. It can take a very long time. You

12 know, it can take four or five months from the time

13 you are actually doing some kind of a tape out

14 plan. Usually you have to include integration.

15 You start making like a test plan for the tape out,

16 but it may take -- I don't know -- anywhere between

17 two to three months and five to six months actually

18 to get the thing out. There are a lot of things to

19 do.

20   BY MS. KORDZIEL:

21   Q. Do you remember with respect to the

22 Nordic product?

23   A. I don't.

24   MS. KORDZIEL: It's 12:15. Do you want

25 to take a break for lunch right now?

1 THE WITNESS: Okay.

2 MS. KORDZIEL: We'll go off the record

3 then.

4

5 (Whereupon, at 12:15 p.m., the proceeding

6 in the above-entitled matter was recessed, to

7 reconvene at 12:45 p.m., this same day)

8

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1 AFTERNOON SESSION

2 (12:50 p.m.)

3 MS. KORDZIEL: Back on the record.

4 BY MS. KORDZIEL:

5 Q. This was marked as Exhibit Number 12 in

6 the Dickinson deposition, and it's a document

7 bearing Bates numbers CL17811 through CL17821.

8 Have you seen this document before,

9 Mr. Bril?

10 A. I do not remember.

11 Q. Do you recall a super video card from IBM

12 Japan?

13 MR. KIM: Objection. You're talking

14 about something that was made by them or requested

15 by them?

16 MS. KORDZIEL: Request.

17 THE WITNESS: Could you repeat, please?

18 BY MS. KORDZIEL:

19 Q. Do you recall a super video card that was

20 requested by IBM?

21 A. Super video? What would this mean?

22 Q. Well, this document is a request for a

23 proposal.

24 MR. KIM: What's the question?

25 MS. KORDZIEL: Oh, whether or not he's

1 seen this document before.

2 THE WITNESS: I don't know if I recall

3 right but I do not think that IBM designed things

4 with Nordic or Viking. I may be wrong but I doubt

5 it. There may have been discussions with IBM but I

6 doubt that there was an actual design.

7 BY MS. KORDZIEL:

8 Q. This was marked as Exhibit 13 in the

9 Dickinson deposition, and it's a document bearing

10 Bates numbers CL95135 through CL95147. Have you

11 seen this document before?

12 A. I do not recall ever seeing this

13 document.

14 Q. Are you familiar with any of the Pixel

15 products such as the Pixel 2070 or the Pixel 2085?

16 A. I heard about them. I did not -- I don't

17 think I read the data sheet or anything like that.

18 Q. Are you aware of the features of the 2070

19 or the 2085?

20 A. Not really.

21 Q. If you turn to page CL95141.

22 MR. KIM: CL95 --

23 MS. KORDZIEL: 141.

24 THE WITNESS: Yes.

25 BY MS. KORDZIEL:

1 Q. Over in the right-hand column under

2 "Multi-media features" it states, "Multi-format

3 frame buffer, RGB/YUV."

4 What is your understanding of that

5 feature?

6 MR. KIM: Objection. Lack of

7 foundation.

8 THE WITNESS: This would mean that there

9 was a memory of some sort which they call a frame

10 buffer which they -- which can have RGB or YUV or

11 RGB and YUV. It's kind of hard to say what RGB/YUV

12 means.

13 BY MS. KORDZIEL:

14 Q. Do you know whether or not the Pixel 2070

15 was used with a multi-format frame buffer?

16 A. My understanding of this Pixel 2070 is

17 that it has some kind of a memory which you can

18 call a frame buffer, but the meaning of frame

19 buffer in conjunction with the 2070 is, in my

20 opinion, totally different than the meaning of

21 frame buffer in conjunction with the graphics

22 controller.

23 And this is exactly what -- for instance,

24 products like Everest, they eliminated the needs of

25 this special memory that would sit somewhere in

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1 between a video controller and the output of a
2 graphics controller. So actually, what is called
3 here frame buffer, it's a totally different
4 meaning.
5   Actually, if you look at this schematic
6 on 95141 --
7   Q. Yes.
8   A. -- they don't show a memory with the
9 graphics controller. This -- actually, there is a
10 memory with a graphics controller. That's what I
11 call a frame buffer; okay?
12   What they call a frame buffer here is
13 this VRAM which has no connection whatsoever to the
14 graphics controller. This is actually a
15 synchronization frame buffer required to
16 synchronize your video with something else because
17 a basic operation of the system is overlay which
18 means that you have two sources of -- how do you
19 say -- you have two sources of something which are
20 fully in sync and you just overlay the two sources
21 so you display one or the other or some combination
22 of them.
23   The very basics of how things work in a
24 Nordic, Viking, Everest, in the MVA architecture is
25 different. You do not have to synchronize the

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1 the very bottom, it states, "Eliminates GENLOCK
2 requirements."
3   A. Okay. Maybe that. I don't know. If it
4 does, it does through this separate RAM, but
5 actually, I don't know how to do this. Why do they
6 show this arrow from graphics to 2070?
7   Q. Oh, I don't know.
8   A. I think that this is some mechanism to
9 actually make the 2070 be in sync with the graphics
10 controller.
11   But in any case, the very basis of what
12 you see here is that you have this memory, this
13 eight meg or VRAM which has nothing to do with the
14 graphics controller which is used to synchronize
15 the video with the graphics.
16   Q. Turning to page CL95146 --
17   A. But you see what I'm telling here, that's
18 again, 141. When they say this frame up, they
19 probably refer to this not to the controller, not
20 to the memory that's attached to the graphics which
21 is what I call the frame buffer. They just are
22 semantics instead of using the same words for
23 something else.
24   MR. KIM: It would probably be helpful if
25 we mention the witness was pointing to go CL95141

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1 video with the graphics before you put them
2 together.
3   Q. What do you mean by you do not have to
4 synchronize video and graphics before you put them
5 together?
6   A. You see, this is kind of the old
7 architecture before you had MVA where you would
8 have some source of video, and what you do, you put
9 it in a separate memory and then you read it from
10 that memory such that you can overlay it with
11 another source of video or graphics.
12   So basically you have a graphics
13 control. You have a video control. You have a
14 memory attached to this video controller. You dump
15 everything in the video controller and then you
16 have these -- something else, what they call media
17 dock that can access this video memory and it can
18 access it in such a way that the video is in sync
19 with the graphics.
20   There is even some other mechanism here
21 which is called GENLOCK, so the two things -- at
22 the end of the day on this media dock, they have to
23 be GENLOCKED. They have to run in sync with each
24 other.
25   Q. If you look in the right-hand corner at

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1 when he made those comments.
2   THE WITNESS: Okay. So we go to four
3 six?
4   MS. KORDZIEL: That's right.
5   BY MS. KORDZIEL:
6   Q. On the right-hand corner under
7 "multi-media features," what is your understanding
8 of the feature multi-format frame buffer, RGB/YUV?
9   MR. KIM: You're talking about as used in
10 this document?
11   MS. KORDZIEL: As used with respect to
12 the address product.
13   MR. KIM: Objection. Lack of
14 foundation.
15   THE WITNESS: Here what you do, you use
16 video the decoder that basically doesn't have its
17 own frame buffer, so it goes to the graphics
18 controller and the graphics controller takes his
19 data, processes it and then can store it in the
20 what I call a frame buffer which is now a unique
21 memory that can hold both graphics and video;
22 okay.
23   There is a big difference between what
24 this 141 says when they say multi-format frame
25 buffer. I don't that's why they use this term. I

1 don't know exactly why they use this term. It's --
2 but they refer to -- at least my understanding is
3 that they would refer to the fact that this VRAM on
4 141 can have either RGB or YUV.
5 So basically, probably this chip which
6 they show here, the chip that's putting data here
7 can put either RGB or YUV. Okay.
8 If you go to 46, here you get this later,
9 that is, 4072 sends video data at the rate it is
10 generated. Then the graphics controller, Everest,
11 will put this data, convert it, down scaled,
12 processed basically in some manner into this unique
13 frame buffer which is used for both graphics and
14 video; and then use the MVA architecture, the MVA
15 basically to display it. That's two independent
16 planes if you will, that's two independent data
17 formats sitting in the same memory.
18 BY MS. KORDZIEL:
19 Q. So the Everest includes the motion video
20 architecture?
21 A. I think so.
22 Q. This was marked as Exhibit Number 4 in
23 the Fontaine deposition.
24 MR. KIM: Was that used yesterday?
25 MS. KORDZIEL: I believe so. Do you have

1 a copy of that?
2 MR. KIM: Let me check. Yes.
3 BY MS. KORDZIEL:
4 Q. And it's a document bearing Bates number
5 CL110959 through CL110972.
6 Have you seen this document before,
7 Mr. Bril?
8 A. I don't remember.
9 Q. Your name appears at the top of the page
10 as being one of the recipients, does it not?
11 A. Yes, but it's been a long time.
12 Q. On the subject line on the first page,
13 CL0959 it states, "Graphics/video presentation
14 material for 2/7 Japan customer visits."
15 Earlier you mentioned you went to Japan
16 for a customer visit. Do you recall whether or not
17 this would be that visit?
18 A. Where it is?
19 Q. Excuse me?
20 A. What do you refer to?
21 Q. Up here under subject.
22 A. Uh-huh.
23 Q. It refers to customer visits in
24 February.
25 A. I doubt if it -- I don't know what year I

1 went to Japan but it was in the summer.
2 Q. If you turn to page bearing Bates numbers·
3 110961 --
4 A. Yes.
5 Q. -- at the top of the page it refers to
6 PackJR. Do you know what PackJR is?
7 A. Yes.
8 Q. And what is it?
9 A. It was some type of a mini compression
10 algorithm that Pixel came up with and they were
11 trying to market this as a feature.
12 Q. The second sentence, what is your
13 understanding of the second sentence?
14 A. Second sentence --
15 Q. After the PackJR question. It starts,
16 "Alternatively, we have been promoting Nordic's
17 multi-media features as MVA (motion video
18 architecture) -- should we extend the definition of
19 MVA to include PackJR?"
20 A. These two were kind of independently
21 conceived. Pixel came up with this kind of format
22 reduction which would give them, you know, a data
23 format reduction which would give like low quality
24 and basically less intensive, you know, data on
25 video.

1 And at some point in time, the portable
2 graphics product started actually to support
3 PackJR, but I don't quite understand the meaning of
4 this phrase, the exact meaning of this phrase.
5 Q. If you could turn to page 110965.
6 Looking at the right-hand side of the page under
7 the line, are those the features of the Nordic
8 product?
9 MR. KIM: Objection. Vague. The
10 document speaks for itself.
11 THE WITNESS: This has some of the
12 features. I thought that Nordic had some scaling
13 capability on the display side. I don't see this
14 mentioned here. Oh, it says replicated, so yeah,
15 it had something.
16 BY MS. KORDZIEL:
17 Q. And what is your understanding of the
18 feature multi-format frame buffer with respect to
19 the Nordic product?
20 A. Yeah, this would mean that you had
21 different data formats for graphics relative to
22 video and you can display both at the same time
23 without -- but you can still store them in memory,
24 different formats, and you can display both of them
25 basically in synchronicity.

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1   Q.   Does it make a difference to the
2 definition of multi-format frame buffer whether the
3 video data is compressed YUV data or not compressed
4 YUV data?
5   MR. KIM: Objection. Vague.
6   THE WITNESS: It depends.
7   BY MS. KORDZIEL:
8   Q.   And what does it depend on?
9   A.   In general, if you -- it depends what the
10 definition is. If you would just understand like a
11 generic thing that you have video data in one
12 format and graphics in a different format, it
13 depends how you coin the phrase basically.
14   If you coin it that it's generic
15 different data format, then it's different data
16 format. If you coin it that it's -- that this data
17 is compressed, then you can make the difference.
18 So it depends how you -- what you -- how you define
19 it.
20   Q.   How do you define multi-format frame
21 buffer as used in the motion video architecture?
22   A.   There are different formats basically.
23 If you have data in different -- but that's my
24 opinion. The way I would define it would be that
25 if you have different data formats, then you can

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1   A.   There is a minor compression relative
2 to -- or a minor, if you want -- there is a
3 minor -- how do you say -- shrinking of the data
4 but it's only going like from three bytes per Pixel
5 to two bytes per pixel. The truth is video as
6 usually used in the industry is 4:2:2 YUV or 4:1:1
7 YUV. You will very seldom see 4:4:4 YUV which is
8 called -- which is
9 playing -- so normally when you deal with video,
10 the most -- you know, normally it would be 4:2:2
11 YUV or 4:1:1 YUV, and you won't call this
12 compressed.
13   Q.   4:4:4 YUV, would that be the native or
14 raw --
15   A.   This would be like the absolute maximum
16 data you can have but it is highly redundant,
17 because if this comes from any TV source, from any
18 NTSC file source, the chroma bend width is only a
19 force relative to luma. So this means that you
20 need only one data chroma for every four luma, so
21 actually, 4:1:1 would be the normal format you
22 would like to handle video.
23   4:2:2 is only the redundant and 4:4:4 is
24 a lot redundant, so the -- if you want, the native
25 video is 4:1:1 YUV, and it's not used that much

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1 say you have a multi-format frame buffer.
2   Q.   So it wouldn't matter whether or not the
3 data was compressed or not compressed?
4   A.   That's my opinion.
5   Q.   With respect to the Nordic product, the
6 multi-format frame buffer, could it store
7 compressed YUV data?
8   A.   I don't recall.
9   Now, when you say compressed, you refer
10 to what?
11   Q.   4:2:2 YUV data.
12   A.   So that's what you call compressed?
13   Q.   That's right.
14   A.   Oh, okay. So I -- okay. I misunderstood
15 what you said throughout the entire discussion when
16 you said compressed.
17   Q.   Well, what was your understanding of
18 compressed?
19   A.   That you were really have a compression
20 algorithm much more efficient than -- or at least
21 more efficient than saying it's four two Y.
22 Because in all this discussion I didn't assume that
23 four two YUV is compressed.
24   Q.   Is 4:2:2 compressed, YUV compressed video
25 data?

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1 because it leads to 12 bits per pixel which is kind
2 of -- doesn't align well in a memory that is
3 byte-oriented.
4   So actually when you talk about 4:2:2
5 YUV, it's kind of almost state of the art video.
6 It's not considered compressed by, you know, people
7 working in video. Do you understand? So that's
8 why I'm actually surprised you used the word
9 compressed with 4:2:2. This is not my
10 understanding.
11   Q.   Oh, I see.
12   A.   When you asked if we had compression, we
13 actually had at some point, and I don't know if it
14 is in Nordic or Viking or whatever; I don't
15 remember. We actually had compression and
16 decompression, a proprietary compression and
17 decompression algorithm for the video data which
18 was supported by one or two of these products and
19 which was never marketed and then it was -- later
20 it was taken out of the product.
21   And at the same time, we started to
22 support this PackJR which was a mild -- you know, a
23 minor compression but it was not truly a
24 compression. It was more like some bits, arranging
25 them differently, whatever.

1   But what I'm saying is it was -- you
2 could -- in a very extended way you could call
3 PackJr a compression. You could call what we have
4 a compression. I wouldn't call 4:2:2 a compressed
5 format.
6   Q.   Are you familiar with CinePak?
7   A.   CinePak? Let me see. I heard this
8 term. It's some Apple standard or Apple people
9 doing something.
10   Q.   I think it's a compression or a --
11   A.   Yeah, I don't know. It was not supported
12 by Apple?
13   Q.   I'm not sure. What about AcuPak?
14   A.   AcuPak? I think AcuPak and PackJR are
15 the same thing. They're just marketing names.
16   Q.   This was marked as Exhibit 2 in the
17 Fontaine deposition. It's a document bearing Bates
18 number CL57850 through 57866.
19   Have you seen this document before?
20   A.   I doubt it.
21   Q.   If you could turn to page 57859. Do you
22 know what a flat frame buffer approach is?
23   MR. KIM: Objection. Lack of foundation,
24 and the document speaks for itself. You're asking
25 for an interpretation of the document in front of

1 Mr. Bril or just his general understanding?
2   MS. KORDZIEL: General understanding.
3   THE WITNESS: Do you want to ask me
4 again, please?
5   BY MS. KORDZIEL:
6   Q.   What is your understanding of the flat
7 frame buffer approach as used on page 57859?
8   MR. KIM: Objection. Document speaks for
9 itself. Lack of foundation and calls for
10 speculation. Are you asking Mr. Bril to make a
11 technical analysis of the document in front of him
12 and guess what it means?
13   MS. KORDZIEL: I just want his
14 understanding.
15   MR. KIM: Okay. Well, I'll repeat my
16 objection.
17   THE WITNESS: Okay. In my opinion, it's
18 some kind of an approach which was kind of proposed
19 by Dave Keene if I remember correctly to integrate
20 graphics and video by placing the video in an RGB
21 form in -- placing the video window inside the
22 graphics in an RGB form and then displaying it as
23 16 bits per pixel RGB only if it is zoomed 2:2 X or
24 as an AB for pixel RGB if it is not zoomed.
25   So somehow -- actually, I don't know. It

1 depends what the graphics is. If the graphics is
2 16 bits per pixel, then it can display 16 bits per
3 pixel; the video is RGB. If the graphics is eight
4 bits per pixel, then you can display it. It's only
5 zoomed 2:2 X.
6   BY MS. KORDZIEL:
7   Q.   If you turn to the next page, 57860, are
8 you familiar with the multi-format frame buffer as
9 used with the 5440 product?
10   A.   I'm not aware of what was exactly done
11 there, no.
12   Q.   Were you familiar with the Alpine CDX
13 product?
14   A.   No.
15   Q.   What is your understanding of the 5440
16 multi-format frame buffer?
17   MR. KIM: Objection. Lack of
18 foundation.
19   THE WITNESS: I don't know what -- I
20 wasn't in the loop with the desktop products. I
21 don't know what was done there.
22   BY MS. KORDZIEL:
23   Q.   Do you know whether or not that was
24 different than the multi-format frame buffer used
25 in the Nordic product?

1   MR. KIM: Objection. Lack of
2 foundation.
3   THE WITNESS: I don't know. I wasn't
4 involved in this. I never read even a data sheet
5 on this.
6   BY MS. KORDZIEL:
7   Q.   Of the 5440?
8   A.   Yeah.
9   Q.   This was marked as Exhibit 15 in the
10 Dickinson deposition. It's a document bearing
11 Bates number CL99791 through CL99811.
12   Are you familiar with this document?
13   MR. KIM: I'll note for the record that
14 the Exhibit 15 begins at page 11 and that there's
15 also a gap in page numbers as well as a difference
16 in the type font in the middle of the document.
17   THE WITNESS: What was the question?
18   BY MS. KORDZIEL:
19   Q.   Are you familiar with this document?
20   A.   I suspect -- I'm not sure. I'm trying to
21 figure it out. I'm trying to figure out if --
22   Q.   Take your time.
23   Also I want to note on page CL99806 it
24 appears to start at a different page and there's a
25 different header and a footer.

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1   A.   Uh-huh. Yeah, this looks like -- this
2 initial document that is the first two pages, they
3 look like a piece of a document I wrote. I was
4 trying to figure out if it's really this or it's
5 something somebody else took and modified. But
6 yeah, it looks very much like, you know, a document
7 I wrote.
8   Q.   So that would be pages CL99791 through
9 CL99805?
10   A.   Yes.
11   Q.   What about the remaining pages?
12   A.   I don't know. Usually I was writing the
13 register spec and then there would be like a
14 technical writer to take this is and do it like
15 this. This looks to me more like what the
16 technical writer was doing. So pages 806 through
17 807, they look more like the formatting of the
18 technical writer.
19   Q.   Let's start with the first portion of
20 that document then.
21   A.   Uh-huh.
22   Q.   I note it starts on page 11. Was this
23 part of a larger document?
24   A.   Probably. Yeah, I don't remember how
25 many pages this document had.

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1 working on the Nordic-1M design specification?
2   A.   No.
3   Q.   Would it be the fall of 1993?
4   A.   I have actually no idea of the time
5 line. It's very hard for me to remember, you know,
6 when things were done.
7   Q.   Under the section that says 4.4 Nordic-1M
8 motion video architecture, Sasha Eglit -- would
9 that be the Alex Eglit that we were referring to
10 earlier?
11   A.   Yeah, we called him Sasha but his name is
12 Alex. Sasha is actually Russian nickname for
13 Alex.
14   Q.   What is your understanding of the
15 statement Sasha Eglit, Rakesh Bindlish Vlad Bril
16 and Dave Keene are important contributors to the
17 motion video architecture definition?
18   A.   You know, I like to give people credit so
19 I just put all that.
20   Q.   What was Mr. Keene's contribution to the
21 motion video architecture?
22   A.   At some point I had some problems how to
23 solve certain things and I was discussing with him
24 and I think he gave me one idea how to solve some
25 issue.

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1   Q.   I see. It also ends on page 24. Do you
2 remember if there were pages after that?
3   A.   I don't know.
4   Q.   What was the Nordic-1 design
5 specification?
6   A.   This was the basis of the design. This
7 was in a way the architecture specification for the
8 Nordic. I still wonder why it was called 1M. I
9 don't remember.
10   Q.   And I note on the bottom it states
11 February 13, 1994 and revision 5.2. Do you recall
12 how many revisions were before this revision?
13   MR. KIM: Objection. Assumes facts.
14   THE WITNESS: I don't recall, but I
15 usually -- when I write documents, I used to have
16 revisions all the time, so you know, there may be
17 tons of revisions.
18   BY MS. KORDZIEL:
19   Q.   So were there earlier revisions than
20 revision 5.2?
21   A.   For sure there were more revisions. At
22 the same time, what was added, what was in there,
23 you know, he wouldn't know. The document kind of
24 grows in time.
25   Q.   Do you know when you first started

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1   Q.   What idea did Mr. Keene give you?
2   A.   I don't know but I remember something,
3 desktop counter or something.
4   Q.   I'm sorry; a counter?
5   A.   Yeah. It was a very specific problem,
6 and by talking to him, you know, I kind of
7 understood how to solve that problem.
8   Q.   Did Mr. Nally work on the motion video
9 architecture?
10   A.   Not that I recall.
11   Q.   If you turn to the next page, at the top
12 of the page it states, "Nordic-1M will further
13 reduce video memory requirements as well as video
14 memory Bandwidth requirements by storing data in
15 compressed form." And then it refers to 4:2:2 YUV,
16 4:1:1 YUV or Sashapak YUV.
17   4:2:2 YUV, would that be a compressed
18 form?
19   A.   How do you say, relative, you know, this
20 was more marketing; okay? Relative to 4:4:4 YUV or
21 RGB 8:8:8 would be less. The real compression
22 would be in the Sashapak.
23   Q.   And what is Sashapak?
24   A.   Sashapak is this proprietary compression
25 scheme which we were supporting. So we were

1 talking about it in the Nordic basically. So it
2 was -- Sashapak was the compression scheme Sasha
3 came up with, so Alex Eglit, which we designed it
4 and supported and which actually -- and which was
5 later taken out and it was not really marketed as a
6 feature.
7   Q.   So the Sashapak compression scheme was
8 taken out of Nordic?
9   A.   I don't know. Out of the future products
10 and in a way out of Nordic because it was not in
11 the data sheet or anywhere.
12   At the time this was kind of new, so, you
13 know, we were trying to present things, like
14 present the advantages of using this kind of data
15 formats.
16   Q.   The Sashapak data format?
17   A.   The Sashapak, the 4:1:1, the 4:2:2,
18 because, you know, for us, for the first time, we
19 would deal with something like this.
20   Q.   If you can turn to page bearing Bates
21 numbers 99805.
22   A.   Okay.
23   Q.   What is the function of the tags that's
24 referred to on page 99805?
25   A.   This was the mechanism which I envisioned

1 to   which would be used to control picture
2 synchronization. Actually, I'm not sure. Maybe
3 I'm wrong.
4   No, this was actually a mechanism to
5 control when you want to display -- okay. This
6 diagram is highly confusing actually, but it was a
7 mechanism to control when you would display
8 graphics or video.
9   So because you have a byte plan, so when
10 you receive pixels in the end, you know, it was
11 some kind of a -- it's not -- if you see here, you
12 have a tag block on the left upper corner.
13   Q.   Yes, tags.
14   A.   And then you have a delay line which
15 would compensate everything. So you propagate with
16 the pixels, you propagate this tag, and this will
17 end up controlling the final marks. So this way
18 you could control how you display.
19   This is not necessarily how it was done.
20 This was more how I would -- how I was thinking
21 that it can be done.
22   Q.   Do you recall whether or not the tags
23 were implemented in the Nordic product that were
24 manufactured?
25   A.   I don't know. Actually, I would doubt

1 that it was.
2   Q.   And why do you doubt that fact?
3   A.   Because I think that -- I think that
4 there are other ways to do it and I think this was
5 kind of a very early -- it was kind of relatively
6 early thinking in terms of this.
7   Q.   Do you know whether or not it was changed
8 from this way it's shown on 99805?
9   A.   I don't know for a fact.
10   Q.   Does the Nordic product have a graphics
11 pipe line, a back-end graphics pipe line?
12   A.   Have what?
13   Q.   Does the Nordic product have a back-end
14 graphics pipe line?
15   A.   That's why I was saying that this picture
16 is confusing. What is called here video controller
17 is actually the graphics pipe line.
18   And the reason it's such is because until
19 we actually started to deal with what we call today
20 video, we were calling the graphics pipe line, the
21 video pipe line. And that's why VGA has a "V" in
22 it, from video. So it's actually doing graphics.
23 So, you know, the entire PC industry, graphics PC
24 industry was calling the graphics video until it
25 actually started to deal with video. As in MPEG or

1 TV.
2   Q.   So the video controller was part of a
3 graphics pipe line; is that correct?
4   A.   What is called here video controller was
5 actually -- this was the graphics here.
6   Q.   Did the Nordic have a back-end video pipe
7 line?
8   A.   Did the Nordic have what?
9   Q.   A back-end video?
10   A.   Yes. This is what you see right where it
11 says Sashapak and 4:2:2 decompression and
12 serializer and upsampling and filtering and YUV to
13 RGB, this is the video pipe line.
14   Q.   And how did Nordic retrieve graphics and
15 video data from the frame buffer?
16   A.   Via the memory controller. So you had
17 one memory controller that would -- actually, there
18 was an interaction. You see this what we call
19 CRT-FIFO?
20   Q.   Yes.
21   A.   This is actually the graphics data,
22 FIFO. MVW which is motion video window FIFO. This
23 is the video FIFO.
24   Q.   What was the purpose of the CRT-FIFO?
25   A.   This was for graphics, for graphics

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1 data. So because memory is working bus, so you do
2 a long cycle, which is called random cycle followed
3 by page cycles which are short, whereas the video
4 works in a very regular fashion. You use usually a
5 FIFO, some kind of a buffer to resynchronize the
6 two.
7   So what you do, you take data from memory
8 and put it in a FIFO and then serialize it and it
9 goes through the pipe line. So here we have like
10 two pipe lines, one for graphics, one for video,
11 which through this mechanism, which actually is not
12 necessary, you -- there are other ways to do it.
13 You keep them synchronized so the pixels match.
14   Q.   So the CRT-FIFO and the MVW-FIFO would
15 regulate the clocking of the data through the pipe
16 lines?
17   A.   No, with -- these FIFOs would do two
18 things. FIFO with the associated logic would
19 request the memory controller to field them so they
20 have to be full at all times, and then they would
21 supply data to the pipe lines on request
22 basically.
23   Q.   How did the memory controller know
24 whether or not it was sending graphics data to the
25 CRT and video data to the MVW FIFO?

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1 pixels and so on. But it's programmed basically.
2 And CRTC reads the controls reading the FIFO,
3 whereas the FIFO logic decides that it tries always
4 to stay full.
5   Now, there is actually something else
6 here which is that you need to keep the pipe field,
7 so that when you start displaying actually, you
8 have pixels available at the end of these marks so
9 that's a little different mechanism but it's
10 similar.
11   MR. KIM: I need to take a break soon,
12 but if you want to keep going for a while, that's
13 up to you.
14   MS. KORDZIEL: How about a few more
15 minutes and then we can take a break. Is that
16 okay.
17   MR. KIM: Sure. That's fine.
18   BY MS. KORDZIEL:
19   Q.   Does the graphics retrieval, with respect
20 to the CRT-FIFO, does that stop when the MVW-FIFO
21 is retrieving video data?
22   A.   The graphics retrieval? Would you repeat
23 this?
24   Q.   Does the graphics data retrieval stop
25 when the video data -- when retrieving video data?

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1   A.   It got requests. You see, the certified
2 calls would send the request, say, I'm empty. Fill
3 me. So then the memory controller -- and
4 basically, there is an average generation mechanism
5 which says, okay, when you start the frame for
6 graphics, you start from this address and then you
7 go and generate addresses and send to it.
8 Similarly for video.
9   So if I would say, okay, I'm empty, give
10 me data, the memory controller would generate
11 proper addresses and fill it. At some point, the
12 CRTC, which does not show in this, there is a block
13 where CRTC would come and start emptying the FIFOs,
14 start generating FIFO leads and it would enable the
15 FIFO leads, and so then data from the FIFO would be
16 supplied to the data banks.
17   Now, there is -- and similarly for video,
18 that is, they also -- the FIFO has to be full, so
19 you'd request to be full, and then the data path
20 itself under the CRTC control comes and empties
21 it. And this happens only inside the video window,
22 which is actually created by the CRTC. The CRT
23 creates a timing window for its vertical into fetch
24 which says, okay, now you need to start fetching
25 it. You fetch for so many lines, for so many

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1   MR. KIM: You're talking about in the
2 Nordic product or in this picture?
3   MS. KORDZIEL: In the Nordic product.
4   THE WITNESS: I don't know. See, there
5 are -- a retrieval from memory?
6   MS. KORDZIEL: That's correct.
7   THE WITNESS: The retrieval from memory
8 doesn't stop. There are two basic modes of
9 operation and I don't remember how Nordic was
10 operating. One mode is supporting occlusion and
11 the other is not supporting occlusion. What -- I
12 don't know; I'm trying to remember.
13   Basically fetching -- so to answer your
14 question, you know, fetching from memory has
15 nothing to do with window display. So the answer
16 to you is kind of the normal answer -- I don't know
17 exactly how Nordic works but the normal answer to
18 your specific question would be that they can --
19 that fetching data from memory can overlap. Now,
20 overlap to a certain extent would be -- the memory
21 can act as only one address at one point. So even
22 this is a little bit hazy; right?
23   BY MS. KORDZIEL:
24   Q.   Is the graphics data continually
25 retrieved and provided to the pipe line?

1   MR. KIM: In the Nordic product?
2   MS. KORDZIEL: In the Nordic product.
3   THE WITNESS: Is there --
4   BY MS. KORDZIEL:
5   Q.   Is the graphics data continually
6 retrieved from the memory and provided to the
7 graphics pipe line in another product?
8   A.   Continuously retrieved? What do you mean
9 by continuously? When the FIFO is empty -- I think
10 really you are trying to refer to supporting
11 occlusion or not but I'm not sure.
12   Q.   What is occlusion?
13   A.   Occlusion means when two windows overlap,
14 overlap. Can you -- how do you say -- can you
15 actually overlap windows? I need to draw you a
16 picture. I cannot explain.
17   Q.   Okay. Well, then why don't we take a
18 short break now and go off the record and then
19 we'll come back and pick up with that.
20   A.   Okay.
21   (Recess taken.)
22   MS. KORDZIEL: Back on the record.
23   BY MS. KORDZIEL:
24   Q.   We were discussing occlusion and you
25 mentioned you were going to draw me a picture.

1   A.   Yeah. What's happening -- let's suppose
2 this is a screen and you have something like this
3 that is -- let's say this is a hardware window like
4 a video window of some sort and this is graphics,
5 so this is a graphics window. So now the issue is
6 what do you do in this area. This is called
7 occluded. These windows are occluded.
8   Q.   Where the video window and the graphics
9 window overlap?
10   A.   Right. So can you display video occluded
11 by graphics this way if this is a hardware window.
12 And this, I don't remember correctly, but I don't
13 know -- I don't remember exactly but in -- it is
14 possible that Nordic was not supporting this.
15   Q.   Not supporting occluded windows?
16   A.   Occluded windows, whereas, in future --
17 like in products that came after Nordic, this was
18 supported.
19   Q.   Did Nordic support color keying with
20 respect to output selection?
21   A.   I don't remember.
22   Q.   What about video windowing?
23   MR. KIM: Objection. Vague.
24   MS. KORDZIEL: With respect to output
25 selection.

1   THE WITNESS: Video windowing? What does
2 that mean?
3   BY MS. KORDZIEL:
4   Q.   For example, in a video window there are
5 certain addresses that define the video window and
6 when it's reading or rastering the display, when it
7 reaches a video window it would display the video
8 data.
9   A.   Yeah, this is what you do; so the answer
10 would be -- if I understood you correctly,
11 obviously you would display the video and you
12 display the video in a window and -- instead of the
13 graphics basically.
14   Q.   And that would be based on the
15 addresses?
16   A.   Based on the addresses? I don't
17 understand it.
18   Q.   For example, if you look on page 99797,
19 the addresses I guess I'm referring to would be the
20 coordinates.
21   A.   When you say "address," do you mean
22 memory address or pixels?
23   Q.   I believe memory.
24   A.   Okay. So these are the -- these are
25 the -- okay, in this case, this was a softer model

1 basically, a softer model for programming the
2 window which is done in pixels just to kind of
3 simplify the work of the programmer, of the
4 software programmer.
5   The basic approach here is that the video
6 window, which is kind of what you call a hardware
7 window in the sense that it is not like a standard
8 Microsoft graphics window or Unix graphics window.
9 You know, when you run Windows, you see different
10 enclosures that look -- that you call windows;
11 right? But they are all one in the same graphics
12 plane even -- no matter how many they are, no
13 matter if they occlude or not; it's all a visual
14 impression. Actually, it is one graphics plane
15 which is built to look like this, whereas, when you
16 have a hardware window, this actually is not a
17 contiguous space in memory with this graphics
18 window. It's somewhere else in memory. And you
19 actually -- when you display, you fetch both areas
20 of memory and you just follow the display for the
21 eye. You put them together.
22   Q.   So this would be for --
23   A.   In memory they are -- you know, this
24 hardware window exists somewhere else. It doesn't
25 exist together with the graphics. As such, you

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1 have to define its size and you have to define
2 where it is in memory and what its address pitch
3 is.
4   So when you say size, you define -- like,
5 okay, there are two aspects. Because you scale,
6 you have to define where you want to actually
7 display it on the screen, and this is the final
8 scaled image which actually doesn't exist in memory
9 but you store in memory the unscaled image.
10   Even this is a little bit -- okay, this
11 is a little bit -- it's partially true. The reason
12 it's partially true is because you do one scaling
13 when you take -- put data in memory and another
14 scaling when you display it. So it's mainly that
15 the image you store in memory is something which it
16 was -- may have been. That's an option. May have
17 been scaled to some extent when you put it in
18 memory, and then it may have been scaled to some
19 extent when you take it from -- when you display
20 it.
21   But whatever, you keep something in
22 memory then. What you program here in pixels is
23 actually the size of the window as you display it,
24 and what you take from memory, it's actually -- you
25 fetch some area of this video which resides in

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1 memory and you keep putting it and refresh it and
2 the video refreshes it at the unscaled size, at
3 whatever size it resides in memory.
4   So, yeah -- I don't know if this answers
5 your question.
6   Q.   Does Nordic product have on-screen and
7 off-screen areas in memory?
8   A.   It can.
9   Q.   And on-screen memory would be the -- what
10 you see on the CRT; is that correct?
11   A.   To a certain extent, but this off-screen
12 and on-screen memory becomes a little bit different
13 when you talk about this concept of multiple
14 windows, multiple hardware windows.
15   Q.   And hardware windows, when you refer to
16 hardware windows, you mean video windows?
17   A.   It can be a video window. A hardware
18 window can be anything. You can have a graphics
19 hardware window if you want to. What I mean by
20 hardware window is the fact that you keep data in
21 memory and then you show them as if they were
22 together but they are really not stored together.
23   Q.   Going back to page 99805, is there a
24 difference between steer tags and other tags?
25   MR. KIM: Are you talking about as used

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1 in this chart?
2   MS. KORDZIEL: As used in 99805.
3   BY MS. KORDZIEL:
4   Q.   What is a steer tag?
5   A.   The idea of the steer tag was that at
6 different levels in this pipe line you may need to
7 do some control, not only at these marks. So I
8 am -- it's kind of a vague concept. I doubt very
9 much if it was actually implemented this way, but
10 the idea of the -- okay, you generate something and
11 they are like control tags. They can help you at
12 different points do different things basically, and
13 I think at some point there were, you know, ideas
14 basically how to use it to do other things like as
15 you -- for instance, you asked about keying and
16 stuff like this. You could actually even generate
17 steer tags for keying, from color keying or from
18 chroma keying.
19   So this was a relatively generic
20 concept. Actually, you know, how it was
21 implemented, that's a different story.
22   Q.   Did Nordic have color keying or chroma
23 keying?
24   A.   I don't remember.
25   Q.   Were the tags --

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1   A.   Future products have. So I know that at
2 some point like Everest had both chroma keying and
3 color keying. Now, if the Nordic had it, I don't
4 know.
5   Q.   Do the tags travel with the data? Are
6 they clocked along with the data?
7   MR. KIM: Objection. Vague. Are you
8 talking about in the actual product or in some
9 concept or --
10   MS. KORDZIEL: In the concept shown on
11 99805.
12   THE WITNESS: Some of them would, yeah.
13 You would have like -- some of them in this
14 concept, the way this concept was done but which --
15 you know, this was just a concept. You have these
16 tags which -- actually, there was one aspect here.
17 I'm trying to remember why it was like this. If
18 you notice this CRT-FIFO output goes also to the
19 video. You notice this?
20   MS. KORDZIEL: Yes.
21   THE WITNESS: And I think that it is
22 possible that these steer tags were actually -- so
23 there was some case where we wanted to use this
24 video data path for graphics; okay? So we would
25 take the graphics data and use actually the video

1 data path for graphics. And this steer tag, one of
2 the functions of the steer tag would be to actually
3 control when you do this.
4   And I suspect this is the meaning of this
5 steer tag note shown here at the very beginning of
6 the two blocks, the video controller and the
7 whatever, serializer; you know, is that it has to
8 control when you use one data path to the other and
9 I do not remember what was in my mind at that
10 time.
11   Actually, I remember some kind of
12 something which surprised me at the time was that
13 many years after this was done, I was talking to
14 John Schaeffer about how pixel chips were done, and
15 I was surprised that it looked very much like they
16 used this diagram as their -- the way they
17 implemented it, and I was very surprised because we
18 actually in -- I don't know exactly when but we
19 didn't implement it this way. So it was like,
20 okay, so I came up with something -- and they had
21 the spec -- so I came up with something and they
22 implemented it very close to the spec but we
23 actually didn't. But this was -- (trailing off)
24   BY MS. KORDZIEL:
25   Q.   Do you remember what pixel products he

1 was referring to?
2   A.   Some graphics products. I don't
3 remember.
4   Q.   Maybe the Alpine CDX?
5   A.   I don't know. I'm not very familiar with
6 the name CDX so I don't know exactly what it is.
7   Q.   Or the 5440 product?
8   A.   I have no idea.
9   Q.   Are you familiar with the Laguna family
10 of products?
11   A.   A little bit, yeah. A little.
12   Q.   Are you familiar with the 5462 or the
13 5464 Laguna products?
14   A.   Not really. I don't even know what they
15 are.
16   Q.   Do you know whether or not the Laguna
17 products had a tagging mechanism?
18   A.   I don't.
19   Q.   Did you patent this concept, the motion
20 video architecture?
21   MR. KIM: Objection. Vague. There are a
22 lot of concepts in there.
23   BY MS. KORDZIEL:
24   Q.   Or the concepts of the having the frame
25 buffer with the multi-formats and the --

1   A.   There is -- I don't know -- there is at
2 least one patent which talks about motion video
3 architecture.
4   Q.   This was marked as Exhibit 16 in the
5 Dickinson deposition and it's U.S. patent
6 5,608,864. Are you familiar with this document?
7   A.   Yeah, to some extent.
8   Q.   Are you an inventor on this patent?
9   A.   Yes.
10   Q.   Is this patent directed to the motion
11 video architecture?
12   MR. KIM: You're talking about as a
13 general issue not necessarily every single detail?
14   MS. KORDZIEL: That's right.
15   THE WITNESS: It is -- you see, if you
16 were asking me in 1994, I could probably have
17 answered much better. So what was the question?
18   MS. KORDZIEL: Could you repeat the
19 question?
20   (Record read.)
21   MR. KIM: Objection. Vague.
22   I believe counsel said in response to my
23 earlier question that the question was directed at
24 the -- generally speaking as opposed to every
25 single detail of the motion video architecture that

1 we discussed before. Even then I think the
2 question is objectionable because it's a long
3 patent with a lot of things in it.
4   THE WITNESS: Let me see what the claims
5 are.
6   MS. KORDZIEL: Take your time. If you
7 need a few minutes to review the document, that's
8 fine.
9   MR. KIM: Is your question directed to
10 the claims of the patent?
11   MS. KORDZIEL: No, it was in general, but
12 if he wants to review the patent, he can take a few
13 minutes.
14   MR. KIM: Okay.
15   THE WITNESS: (Perusing document) Okay.
16 So the question was is this related to video motion
17 architecture?
18   MS. KORDZIEL: Yes, that's the question.
19   THE WITNESS: I think it is but I thought
20 there was some other patents which actually were
21 relating directly to motion video architecture.
22 Maybe I'm wrong.
23   BY MS. KORDZIEL:
24   Q.   Were you an inventor on the other patent
25 if this other patent exists?

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1   A.   Probably.
2   Q.   If you turn to figure six, is figure six
3 similar to the figure that we were looking at on
4 page CL99805?
5   MR. KIM: Objection. Vague. The two
6 documents speak for themselves.
7   THE WITNESS: Yeah, it is similar.
8   BY MS. KORDZIEL:
9   Q.   Was the patent based on the concepts of
10 the motion video architecture?
11   A.   As described in this document?
12   Q.   Yes.
13   A.   Probably.
14   Q.   Looking at figure six, the memory array
15 which is marked as 601 --
16   A.   Uh-huh.
17   Q.   -- does the memory array contain data of
18 different formats?
19   MR. KIM: You're asking for his
20 understanding based on looking at figure six only
21 or do you want him to look at --
22   MS. KORDZIEL: Or you can look at the
23 rest of the patent.
24   THE WITNESS: I would assume so.
25   BY MS. KORDZIEL:

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1   Q.   And is --
2   A.   There are some strange things here which
3 I don't understand.
4   Q.   What don't you understand?
5   A.   Why is 601 hooked to 690 and 651?
6   Q.   Is that different or similar to the
7 diagram on 99805?
8   A.   Yeah.
9   Q.   It is similar?
10   A.   I don't know. It doesn't make any sense
11 to me. Why it says here "to host BIU"? So I'm
12 trying to understand.
13   Q.   Is this patent, the 864 patent, directed
14 to a single integrated video and graphics
15 controller?
16   A.   I assume so.
17   Q.   And does the 864 patent have back-end
18 video and graphics pipe lines?
19   MR. KIM: Are you talking about a
20 particular embodiment now or --
21   MS. KORDZIEL: The embodiment shown in
22 figure six.
23   THE WITNESS: Yeah, it -- I don't know.
24 The way I understand it at least it does.
25   BY MS. KORDZIEL:

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1   Q.   If you turn to --
2   A.   But there are some things here which I
3 kind of -- they don't like too correct.
4   Q.   If you look to column eight of the
5 patent.
6   A.   Yes, column eight.
7   Q.   If you look at line 54.
8   A.   Yes.
9   Q.   It states, "To prevent such a wrong
10 count, the CRT address counter may be stopped while
11 the MVW is displayed and loaded with a value
12 corresponding to the end of the MVW and restart of
13 the background display."
14   What is your understanding of that
15 statement?
16   MR. KIM: I'll point out that that's a
17 sentence in the middle of a paragraph, so it may be
18 helpful to look --
19   MS. KORDZIEL: You can read the rest of
20 the paragraph.
21   MR. KIM: -- at the rest of the context,
22 and also feel try to take as much time as you need
23 to understand the patent since it's been a while
24 since you looked at it.
25   Now, are you asking for his understanding

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1 today or his understanding when this patent was
2 written or what?
3   MS. KORDZIEL: His understanding today.
4   MR. KIM: Based on reading it today?
5   MS. KORDZIEL: And his recollections as
6 the inventor, one of the named inventors of the
7 patent.
8   MR. KIM: Yeah, well, I asked because
9 there's a difference between the two and you may
10 want to distinguish between those two or establish
11 some foundation.
12   THE WITNESS: Okay. This is related to
13 what I told you before, occlusion and no
14 occlusion. If you support occlusion, then you
15 actually fetch data -- fetch graphics data all the
16 time even while you actually fetch and display
17 motion video data because they are overlapping. So
18 you actually fetch both graphics and video even if
19 you display one of them.
20   If you do not support occlusion, then you
21 can stop fetching graphics while you display or
22 fetch video. Nordic fed the mechanism where -- I
23 don't know if Nordic supported both modes or
24 supported only one of them. I know later we had
25 products which supported both, and actually, the

1 occlusion mode became the standard way of operation
2 because Microsoft required that to support
3 occlusion; but this refers to the mode when you
4 wouldn't support occlusion and then you had to --
5 then you would stop fetching graphics while you
6 were fetching video basically or were displaying
7 video.
8   And there were all kinds of mechanisms
9 to -- what happens is normally you have a way to
10 keep track of how many memory fetches you do per
11 line. And for graphics, so you know, okay, if I
12 have so many pixels, I do so many fetched, and
13 every time you fetch, you count and you stop at the
14 end of the count.
15   In this case, you would lose track
16 because you stop fetching in the middle of the line
17 so you had the mechanisms to make sure that when --
18 even if you started fetching 100 pixels later, for
19 instance, you knew when to stop and you were
20 stopping at the right point. So this is just --
21 that's what it's talking about.
22   BY MS. KORDZIEL:
23   Q.   So you don't remember whether or not the
24 Nordic had the --
25   A.   I don't remember.

1   Q.   And you mentioned something about a
2 Microsoft requirement to store occlusion. What
3 were you referring to there?
4   A.   Microsoft Windows kind of required to
5 support occlusion, so actually, it wasn't like it's
6 required. Windows wouldn't work properly without
7 occlusion.
8   Q.   Would this have been referenced in the
9 Microsoft DCI specification?
10   A.   No. They were not aware of -- Microsoft
11 was not aware of this hardware windowing for a long
12 time, and originally -- that's why I was working
13 with Pixel, because originally some people at
14 Pixel -- and I remember a guy called Scott
15 McDonald, and he was working with another guy whose
16 name I don't remember, and that's the name I was
17 trying to remember; actually he worked pretty close
18 with us. And actually, Scott McDonald came later.
19   But there was a group at Pixel that
20 actually initially developed some software that
21 would allow us to show video in Windows even though
22 Microsoft was not supporting this kind of feature.
23 And actually, this was part of the debate in Cirrus
24 to do this or not. This was before Microsoft was
25 supporting this, so we had to actually feel out how

1 to do it and we did and this was done actually by
2 some people at Pixel.
3   Q.   Looking back at the patent in column
4 eight and line 54, it states that "the CRT address
5 counter may be stopped." Do you recall whether or
6 not the 864 patent invention supported occlusion of
7 windows?
8   MR. KIM: Objection. Vague. Are you now
9 talking about anywhere in the entire specification
10 or are you talking about as described within this
11 paragraph?
12   MS. KORDZIEL: Anywhere in this
13 specification.
14   THE WITNESS: I don't think that it is
15 precluded in any way especially by the claims. The
16 design -- I don't know; I didn't read the claims
17 well enough, but it doesn't seem to me that you --
18 you know, this patent would not support occlusion.
19 It seems like it should but I -- you know, it's all
20 fine print.
21   MR. KIM: Do you want Mr. Bril to go
22 through every paragraph and try to figure that out
23 or is there some particular line that you want to
24 point him to in the exhibit because I think that
25 might be helpful if you can ask if certain parts of

1 it show support of occlusion affirmatively.
2   MS. KORDZIEL: Can you read back what he
3 just said? Did he say didn't preclude it? I can't
4 remember.
5   (Record read.)
6   MR. KIM: And I'll repeat my comment that
7 it seems it might be helpful if there's some
8 particular paragraph you want to ask him if that
9 shows support of occlusion or teaches it; that
10 might be a helpful way to proceed rather than
11 asking Mr. Bril to read every single paragraph of
12 the fine print.
13   BY MS. KORDZIEL:
14   Q.   Do you recall, Mr. Bril, whether or not
15 any products at Cirrus embody the invention of this
16 patent, the 864 patent?
17   A.   Do I recall what?
18   Q.   Do you recall whether any products at
19 Cirrus embody the invention of the 864 patent?
20   MR. KIM: You're talking about any of the
21 claims?
22   MS. KORDZIEL: Any of the claims.
23   MR. KIM: Not necessarily all of them?
24   MS. KORDZIEL: That's right.
25   THE WITNESS: You're talking about

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1 portable graphics or other groups?
2   MS. KORDZIEL: Portable graphics.
3   THE WITNESS: I think that most products
4 that portable graphics did after Nordic had some
5 elements of this patent even though the preferred
6 embodiment may not have been exactly what is
7 described in this patent. That is in time -- you
8 know, this mechanism changed -- and actually, the
9 preferred embodiment described in this patent is
10 probably a little bit outdated though I wouldn't --
11 I am not too sure that, you know, as I said before
12 that what is in silicon is exactly what's in here
13 though the concept is similar then -- but then it
14 evolved in time and it improved and stuff like
15 this.
16   BY MS. KORDZIEL:
17   Q. Going back to the Nordic product. We
18 talked about earlier that it had some back-end
19 scaling. Do you recall whether or not that was by
20 replication or by interpolation?
21   A. I am not sure. I read somewhere in one
22 of these documents that it says that it's by
23 replication. Today basically. But I don't know.
24 I don't remember basically by now how it worked.
25   Q. What is the difference between vertical

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1 YUV to RBG, you have to have a pair of values for
2 each pixel.
3   Filtering would mean that it filters,
4 that it interpolates. And the question is I would
5 find hard to believe, though I don't know, but I
6 would find hard to believe that no filtering was
7 done horizontally, because if you do -- because
8 horizontally it's very easy -- it kind of requires
9 very little hardware to do filtering, whereas,
10 vertically it's expensive because it requires line
11 buffers unless you do some -- replace some games in
12 which you need to have higher memory boundaries.
13 So you either stress your memory boundaries or you
14 put line buffers which are big chunks of die area
15 so -- but horizontal is very good, so some
16 filtering was probably done at least horizontally.
17   BY MS. KORDZIEL:
18   Q. During the development of the Nordic
19 product --
20   A. But again, this is speculation. It's not
21 like I remember right now.
22   MR. KIM: Well, then, it's my
23 understanding you're talking about the picture here
24 in 99805.
25   THE WITNESS: That's true. Right. So

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1 replication and vertical interpolation?
2   A. If you -- you are talking about
3 upscaling, so if you replicate, basically you will
4 repeat a line sometimes depending on the scaling
5 factor. If you interpolate, you would do a
6 filtering with the multiple lines where each line
7 becomes a tap. Similarly you -- this is vertical.
8 Horizontally you operate on pixels.
9   But the end result is that when you
10 filter what your actual output is, it is different
11 than what you received. It is what you display
12 after filtering would not be equal to any one of
13 the lines you actually receive the input on. The
14 filter would be an arithmetic operation of some
15 sort between them.
16   Q. Looking back on page 99805, on the
17 functional block, upsampling and filtering, what is
18 your understanding of that functional block?
19   MR. KIM: As used in this particular
20 document?
21   MS. KORDZIEL: Yes.
22   THE WITNESS: I think that there was some
23 filtering done at least on your horizontal side of
24 the scaler. Upsampling means in this case that you
25 go from 4:2:2 to 4:4:4. So before you convert the

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1 based on what you show me here, I would say some
2 filtering was done.
3   MR. KIM: In this --
4   THE WITNESS: Which means some
5 interpolation. Filtering or interpolation, you
6 know, in the technical language or meaning is
7 similar.
8   BY MS. KORDZIEL:
9   Q. During the fall of 1993, did you know how
10 to perform vertical interpolation? Was that a
11 known concept?
12   A. Yeah.
13   Q. Why would replication be used then rather
14 than interpolation?
15   A. You would use it vertically because you
16 didn't want to put line buffers. You know, for
17 each extra tab you need to put one line buffer,
18 which is like -- let's say if you do it on 4:2:2
19 YUV and if you have to display, let's say, I don't
20 know, 64480 or whatever, so then you talk about
21 over -- like 1.2 kilobytes of RAM or something.
22 It's pretty big for each tap.
23   Q. And when you refer to line buffers, are
24 you referring to FIFOs?
25   A. No, you can do it with FIFOs, but

1 normally you can do it with the RAM. So it's like
2 you have to store the data from the previous line
3 so you -- from the previous line or lines so you
4 can operate and create a new pixel value basically
5 for the next line.
6 And when I say "previous," it's kind of
7 relative because actually you can make your current
8 line to be a -- what you call a current line could
9 be actually something which you fetched before and
10 you just display it so that you call the current
11 line really the next line so, you know, there are
12 all kind of tricks you play here.
13 Q. In the fall of 1993, did you know how to
14 implement vertical interpolation using FIFOs?
15 MR. KIM: Objection. Vague. Are you
16 talking about a particular product now or just in
17 the abstract theory?
18 MS. KORDZIEL: In the abstract.
19 THE WITNESS: Using FIFOs? Vertical
20 interpolation using FIFOs?
21 MS. KORDZIEL: (Indicating in the
22 affirmative)
23 THE WITNESS: I don't know. The answer
24 is yes, but it's not the way to do it.
25 BY MS. KORDZIEL:

1 Q. Why isn't it the way to do it?
2 A. I'm not sure what you refer to when you
3 say FIFOs. It is my understanding -- the way I
4 would do it -- when you say using FIFOs, can you
5 describe the mechanism?
6 Q. Like, for example, storing one line or
7 one line of video data and one FIFO and then
8 storing the second line of video data in the second
9 FIFO.
10 A. And why do you call this a FIFO?
11 Q. Just some storage means.
12 A. So if you call this a RAM, yes, but the
13 reason I don't want to call it a FIFO is because --
14 you know -- how to say -- in my mind this FIFO
15 means a specific way of implementing it. So the
16 thing is, and I wouldn't implement it this way. I
17 would implement it basically with RAM.
18 Q. With the RAM, do you clock out the data
19 to the output at a particular rate?
20 MR. KIM: Objection. Vague.
21 THE WITNESS: You read the data from the
22 RAM at the particular rate but it may not be the
23 video clock. You see, a FIFO is a two-ported
24 storage. You can do read and write at the same
25 time. A RAM, unless it's a dual-ported RAM, it's a

1 one-port storage and it's more economical. We
2 really kind of get into chip design details here.
3 BY MS. KORDZIEL:
4 Q. Would there be any advantage of using the
5 FIFOs?
6 MR. KIM: Objection. Vague.
7 THE WITNESS: Not in my opinion. I don't
8 think so. Maybe it's easier to design or something
9 but it is more expensive.
10 BY MS. KORDZIEL:
11 Q. Was that an option back in the fall of
12 1993, using FIFOs?
13 MR. KIM: Objection. Vague. Calls for
14 speculation.
15 THE WITNESS: I wouldn't know. I would
16 remember it back then, because it's kind of a -- to
17 me it's better practice to use FIFOs, at least
18 today.
19 BY MS. KORDZIEL:
20 Q. Okay. This was marked Exhibit 20 in the
21 Nally deposition, and it's bearing Bates number
22 CL4897.
23 Are you familiar with this document?
24 A. I don't think I ever saw it.
25 MR. KIM: Excuse me. Which exhibit is

1 this?
2 MS. KORDZIEL: Oh, I'm sorry?
3 MR. KIM: Which exhibit has this been
4 marked in?
5 MS. KORDZIEL: Nally, Exhibit Number 20.
6 MR. KIM: Oh, I'm sorry. Just one
7 housekeeping matter; I think there was a diagram
8 that you drew.
9 MS. KORDZIEL: Yeah, let's mark that as
10 Exhibit Number 3.
11 (Exhibit No. 3 was marked for
12 identification.)
13 BY MS. KORDZIEL:
14 Q. What is your understanding of figure six
15 of variable pixel depth?
16 MR. KIM: Objection. Calls for
17 speculation. You're asking him to guess as to what
18 Dave Keene meant by a document he's never seen?
19 Lack of foundation also.
20 THE WITNESS: I don't know.
21 BY MS. KORDZIEL:
22 Q. Would that be the 864 patent?
23 MR. KIM: Same objection.
24 THE WITNESS: I wouldn't know.
25 BY MS. KORDZIEL:

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1   Q. Do you know -- what is your understanding
2 of the statement, "Note the name Vlad Bril as
3 inventor. Note the lack of Robert Nally."
4   MR. KIM: Objection. Calls for
5 speculation as to what was in somebody else's
6 mind.
7   THE WITNESS: Yeah, I don't know what --
8 Dave Keene didn't like me, so I don't know what --
9 I had some -- or he had some problems with me at
10 some point.
11   BY MS. KORDZIEL:
12   Q. Were you familiar with the Alpine
13 proposals?
14   A. No.
15   Q. Did you ever see any 5440
16 specifications?
17   A. I don't remember.
18   Q. Do you remember whether or not you
19 reviewed any Alpine CDX specifications?
20   A. I may have reviewed some parts of it.
21 I'm not sure. I'm not quite sure what Alpine CDX
22 was. I'm a little confused here.
23   Q. It was the product name for the 5440
24 product.
25   A. Uh-huh. Yeah, I'm not sure.

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1   A. A what?
2   Q. Like sometimes companies have a -- when
3 you're -- before you prepare a patent application
4 you might fill out an invention disclosure form
5 which describes the invention, and sometimes you
6 give it to your patent attorney.
7   A. I don't know. Maybe. I wouldn't
8 remember.
9   Q. What was the process at Cirrus for
10 obtaining patent applications?
11   A. Normally you would have like half a page
12 proposal which you would give to your boss, but I
13 wouldn't know if I did this because I was the
14 boss.
15   Q. Do you remember when you first started
16 working on a patent application for the 864
17 patent?
18   A. When? I don't remember.
19   Q. Would it have been in the fall of '93?
20   A. I really don't know.
21   MS. KORDZIEL: Can we take a short break
22 off the record? I want to look for a document.
23   MR. KIM: Okay.
24   (Recess taken.)
25   MS. KORDZIEL: Back on the record.

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1   Q. Did Robert Nally contribute to the video
2 functionality of the Nordic product?
3   MR. KIM: Objection. Vague.
4   THE WITNESS: It's hard to say. He was
5 involved later like in Everest especially related
6 to PackJR or AcuPak, but I don't remember if and
7 what would have been his involvement in the Nordic
8 time.
9   BY MS. KORDZIEL:
10   Q. Was he involved in any of the video
11 features of the motion video architecture?
12   A. I don't think so. At least -- I don't
13 know if -- you know, there were some issues but
14 sometimes -- I think especially in Everest where he
15 would strongly recommend not to do something and do
16 you do it any way, but this was more -- he was more
17 on the side of asking us not to do things than to
18 do things. At least that's what I remember right
19 now.
20   Q. But you don't remember with respect to
21 the Nordic product?
22   A. No, I really do not remember at all his
23 involvement with Nordic.
24   Q. Did you fill out an invention disclosure
25 form for the 864 patent?

CONFIDENTIAL DESIGNATION 1

1   BY MS. KORDZIEL:
2   Q. This was marked as Exhibit 17 in the
3 Dickinson deposition, and it's bearing Bates
4 numbers CL99784 through CL99788.
5   MR. KIM: Which exhibit is it?
6   MS. KORDZIEL: 17 in Dickinson.
7   BY MS. KORDZIEL:
8   Q. Are you familiar with this document?
9   A. It looks like something -- at least the
10 first part I should have been familiar at the
11 time.
12   Q. Is this a pinout specification of the
13 Nordic product?
14   A. Probably.
15   Q. Return to page 99785.
16   A. Yes.
17   Q. What is your understanding of the
18 statement, "Delta list over previous pinout
19 released on"?
20   MR. KIM: Are you asking for his
21 recollection or --
22   MS. KORDZIEL: His recollection.
23   THE WITNESS: This would be like
24 modifications to the pinout basically. This would
25 be like dates when I made modifications to the

1 pinout or somebody made modifications to the
2 pinout.
3   BY MS. KORDZIEL:
4   Q. So on August 26th, 1993 would these --
5 underneath are two bullet points, would those be
6 the bullet points that were the modifications made
7 on that date?
8   MR. KIM: Objection. Are you asking for
9 his recollection or just what the document says?
10   MS. KORDZIEL: His recollection.
11   MR. KIM: Are you asking whether he
12 recalls whether those modifications were made at
13 that date?
14   MS. KORDZIEL: That's right.
15   THE WITNESS: I can speculate that these
16 were the dates when the -- when these modifications
17 were entered into the spec or something like this.
18 Not necessarily the dates when they were decided to
19 be made or -- this is more like updating the
20 document.
21   BY MS. KORDZIEL:
22   Q. So on October 26th, 1993, according to
23 this document, those two features were entered into
24 the spec; would that be correct?
25   A. October?

1   Q. I mean, looking at the top just for
2 example. August 26th, 1993, and then there's two
3 items listed under there. Would that mean that
4 those two items were entered into the spec on
5 August 26th, 1993?
6   MR. KIM: Objection.
7   THE WITNESS: It's like, you know, the
8 spec was updated probably on the date relative to
9 these modifications. So it's like, you know --
10 this doesn't mean the decision was made on that day
11 or anything. It means the spec was updated
12 relative to this on that date.
13   BY MS. KORDZIEL:
14   Q. So on that date, the spec was updated to
15 show those two --
16   A. Modifications.
17   Q. -- modifications?
18   A. Yeah.
19   Q. Do you know whether or not this document
20 is part of a larger document? It starts on page
21 six.
22   A. I wonder because it doesn't have a -- it
23 doesn't seem to have -- it doesn't look like a
24 title and -- it may be actually part of the data
25 sheet. But I wonder why it has this provision.

1 This looks more like my style so I don't know. It
2 should be a design spec. So probably -- it may be
3 part of a larger document. I would speculate.
4   MR. KIM: Object to the question in that
5 the response is based on speculation as opposed to
6 personal knowledge.
7   BY MS. KORDZIEL:
8   Q. Do you remember when you completed the
9 motion video architecture definition?
10   MR. KIM: Objection. Asked and
11 answered.
12   THE WITNESS: No.
13   BY MS. KORDZIEL:
14   Q. Do you know when you completed a
15 definition of the concepts of the invention of the
16 864 patent?
17   MR. KIM: Objection. Vague.
18   THE WITNESS: Could you repeat this,
19 please?
20   BY MS. KORDZIEL:
21   Q. Or when did you invent the concepts?
22   A. I don't remember at this point.
23   MS. KORDZIEL: I'd like to mark this
24 document as Exhibit Number 4.
25   (Exhibit No. 4 was marked for

1 identification.)
2   BY MS. KORDZIEL:
3   Q. And it's a document bearing Bates numbers
4 CL28423 through 28896.
5   Have you seen this document before?
6   MR. KIM: Do you want him to vouch for
7 every page?
8   THE WITNESS: I may have seen the first
9 page or whatever. I probably browsed through it in
10 different versions.
11   BY MS. KORDZIEL:
12   Q. Did you work or help prepare this
13 document?
14   A. Yes. I was usually looking at the file
15 which the technical writer was writing.
16   Q. When did you start working on this
17 document?
18   A. I don't know.
19   Q. If you turn to page 28476, is this a
20 functional block diagram of the Nordic product, the
21 7542?
22   MR. KIM: Are you talking about at this
23 point in time or --
24   MS. KORDZIEL: At that time or August
25 1994.

CONFIDENTIAL DESIGNATION   137

1   THE WITNESS: It looks like it is
2 intended to be a diagram of the product but this is
3 more of like a marketing document.
4   BY MS. KORDZIEL:
5   Q.   Do you know whether or not the design
6 changed from this functional block diagram with
7 respect to the product, Nordic product, as it was
8 sold?
9   MR. KIM: In any respect?
10   MS. KORDZIEL: The general functional
11 features.
12   MR. KIM: Objection. Vague.
13   THE WITNESS: I would say this is some
14 kind of a graphical representation done by a
15 marketing person. It is not intended to be
16 technically accurate or too technically accurate.
17 So, you know, it has some measure of truth but it's
18 all very interpretable.
19   So when you're asking me if it changed or
20 not relative to this, I don't think it was ever --
21 it depends how you interpret this specific diagram
22 basically. It is not intended to be very tech --
23 very accurate technically.
24   BY MS. KORDZIEL:
25   Q.   Let's turn to page CL28487.

CONFIDENTIAL DESIGNATION   13

1   THE WITNESS: The motion video window is
2 this hardware window. This is -- how to say it --
3 actually, it's this hardware window that we -- in
4 which we display video basically. Actually, it
5 doesn't have to be video; in which you display, you
6 know, some other -- like 4:2:2 YUV format or
7 something. But basically it's the hardware window
8 as displayed.
9   So when you refer to the motion video
10 window, what you mean is that you have this -- you
11 have a mechanism to fetch what you call graphics
12 for memory and you have a mechanism to fetch what
13 you call video from the same memory in a different
14 data format.
15   You take this video data in the different
16 data format and process it independently and then
17 you convert it to the same format actually that the
18 graphics is in and you then decide which one you
19 put or you may also display a combination of them
20 theoretically.
21   BY MS. KORDZIEL:
22   Q.   What is your understanding of that first
23 statement, "MVA creates a motion video window that
24 utilizes off-screen memory and which is positioned
25 on top of the VGA graphics mode data"?

CONFIDENTIAL DESIGNATION   138

1   MR. KIM: CL284 --
2   THE WITNESS: Actually, for instance, you
3 have a block here I don't know. NTSC power
4 output. What is this?
5   BY MS. KORDZIEL:
6   Q.   Meaning output to a TV?
7   A.   There is this block here.
8   Q.   Yeah.
9   A.   Yeah.
10   Q.   I'm not sure.
11   A.   I don't remember anything related to this
12 in the product, just to give you an example.
13   MR. KIM: The record should reflect that
14 Mr. Bril was referring to 28476.
15   BY MS. KORDZIEL:
16   Q.   Let's turn to page 28487.
17   A.   Okay.
18   Q.   Looking at the top of the right-hand
19 column under "motion video window," what is the
20 motion video window?
21   MR. KIM: You're referring to as used in
22 this document?
23   MS. KORDZIEL: Yes.
24   MR. KIM: Objection. Lack of
25 foundation. Document speaks for itself.

CONFIDENTIAL DESIGNATION   14

1   MR. KIM: Objection.
2   THE WITNESS: This document -- you know,
3 this specific part of this document, of this big
4 document was actually written by a marketing guy.
5 It's actually I think a combination of Bob Connor
6 and maybe somebody else like Dennis Chow or maybe
7 somebody else. I'm not sure if Dennis Chow was
8 around but somebody like Dennis; but I think Bob
9 Connor was actually quite involved in writing this
10 if I remember correctly.
11   So it's not very much technically
12 accurate. I can probably take many phrases and
13 analyze them and they wouldn't be what I would
14 write basically. So, for instance, the use of the
15 word "off-screen memory" here is kind of a misuse.
16   BY MS. KORDZIEL:
17   Q.   And why is that?
18   A.   Because what is off-screen? That is, if
19 you display it, it's on-screen or off-screen.
20 It's -- how do you say -- it wants to say something
21 and you can kind of say, oh, yeah, this is not in
22 my graphics data which I would normally display it,
23 but actually I end up displaying it. So if you
24 want to argue what is in the graphics is
25 off-screen, so it's in the middle of what I would

1 normally display. So that's why I'm saying it's a
2 misuse of the term.
3   Q. Do you know whether or not the Nordic
4 product had off-screen and on-screen areas in its
5 frame buffer?
6   MR. KIM: Are you talking about as used
7 in this document or as Mr. Bril would define it?
8   MS. KORDZIEL: As you would define it.
9   MR. KIM: I think we need some foundation
10 as to what that is.
11   THE WITNESS: This is --
12   MR. KIM: And I object on that basis.
13   THE WITNESS: Do we know -- can you
14 repeat the question?
15   BY MS. KORDZIEL:
16   Q. Well, first, how do you define on-screen
17 and off-screen memory areas of the frame buffer?
18   A. Okay. Let's suppose I have a big area of
19 memory and I can somehow track, which is actually
20 harder because you don't have the transformations
21 like, you know, you palletize, you scale, you do
22 all kind of format conversions, whatever; but let's
23 suppose you can somehow go back through the data
24 path and track each pixel to where it is stored.
25 If you want to be technically accurate, whatever I

1 see on the screen, if I can go back and track it, I
2 will find some area in memory which represents in
3 some form the data.
4   I cannot write and then -- for instance,
5 if you do upscaling, you may actually find many
6 pixels that track back to the same bits in memory.
7 This would be your on-screen memory, whatever
8 tracks back. Anything that doesn't would be
9 off-screen; but because you have multiple planes
10 that can actually be attached to a pixel, what
11 this -- this means that some pixels actually in the
12 middle of your surface which you display, exactly
13 where you actually display, let's say, a video
14 window, a motion video window, may not be on-screen
15 because you display the video window. So if you
16 track back, you would go to the other area. So
17 these two areas may not be contiguous but they are
18 both on-screen. If you really want to be literally
19 correct. It's just a way of saying things.
20   Q. So would on-screen be what is displayed
21 on the screen?
22   A. Yeah.
23   Q. The CRT screen?
24   A. It would basically be what is -- if you
25 take the pixels and go through a reverse

1 transformation on your video data path, you will
2 find some memory areas, you know, which correspond
3 to these pixels. This would be on-screen. What is
4 not there -- everything else that's outside this
5 would be off-screen.
6   And so that's -- but this is not -- I
7 would not have phrased this this way. I would
8 actually avoid using off-screen, on-screen in this
9 paragraph.
10   Q. What is your understanding of the
11 statement in the middle of the page, "The motion
12 video windows color pixel depth is independent of
13 the color pixel depth of the surrounding
14 graphics"?
15   MR. KIM: Objection. Lack of
16 foundation. Document speaks for itself. I think
17 Mr. Bril has testified that he wouldn't write it
18 this way.
19   THE WITNESS: Yeah, I would say that
20 that's true that what is said here is like, you
21 know, that there is no connection between the data
22 formats and the number of colors in graphics versus
23 motion video window.
24   BY MS. KORDZIEL:
25   Q. Would that be referring to the

1 multi-format frame buffer?
2   MR. KIM: Objection. Calls for
3 speculation. Lack of foundation.
4   THE WITNESS: Maybe.
5   BY MS. KORDZIEL:
6   Q. Does the multi-format frame buffer hold
7 data of different color depths? Strike that.
8 Pixel depths?
9   MR. KIM: Objection. Vague.
10   THE WITNESS: It depends what you mean by
11 multi-format frame buffer. In a generic sense,
12 yes.
13   BY MS. KORDZIEL:
14   Q. What about with respect to the motion
15 video architecture?
16   A. You can argue that the motion video
17 architecture is based on holding different formats
18 in memory.
19   Q. If you turn to page 28425, looking on the
20 left-hand side where it refers to motion video
21 architecture, what is your understanding of true
22 color full motion video playback?
23   MR. KIM: Objection. Lack of
24 foundation.
25   THE WITNESS: That's again marketing.